MCQ Questions Bank 2021-22

CLASS X

Term 1

CBSE

MATHEMATICS

FULL EXPLANATION

CHAPTER	NO. OF MCQ
Real Numbers	119
Polynomials	148
Pair of Lin. Eq. in Two Variable	218
Triangles	153
Co-ordinate Geometry	176
Intro. of Trigonometry	185
Area Related to Circles	175
Probability	301

✓ Included Case Study Questions

✓ Included Assertion Reason Questions

NODIA

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CHAPTER 1

REAL NUMBERS

1. The sum of exponents of prime factors in the prime-factorisation of 196 is
(a) 3
(b) 4
(c) 5
(d) 2

SOL: www.cbse.site/ma/am101

2. The total number of factors of prime number is
(a) 1
(b) 0
(c) 2
(d) 3

SOL: www.cbse.site/ma/am102

3. The HCF and the LCM of 12, 21, 15 are respectively
(a) 3, 140
(b) 12, 420
(c) 3, 420
(d) 420, 3

SOL: www.cbse.site/ma/am103

4. The decimal representation of $\frac{11}{2^3 \times 5}$ will
(a) terminate after 1 decimal place
(b) terminate after 2 decimal place
(c) terminate after 3 decimal places
(d) not terminate

SOL: www.cbse.site/ma/am104

5. The LCM of smallest two digit composite number and smallest composite number is
(a) 12
(b) 4
(c) 20
(d) 44

SOL: www.cbse.site/ma/am105

6. HCF of two numbers is 27 and their LCM is 162. If one of the numbers is 54, then the other number is
(a) 36
(b) 35
(c) 9
(d) 81

SOL: www.cbse.site/ma/am106

7. HCF of 144 and 198 is
(a) 9
(b) 18
(c) 6
(d) 12

SOL: www.cbse.site/ma/am107

8. 225 can be expressed as
(a) 5×3^2
(b) $5^2 \times 3$
(c) $5^2 \times 3^2$
(d) $5^3 \times 3$

SOL: www.cbse.site/ma/am108

9. The decimal expansion of $\frac{23}{2^2 \times 5^2}$ will terminate after how many places of decimal?
(a) 2
(b) 4
(c) 5

(d) 1

SOL: www.cbse.site/ma/am109

10. The decimal expansion of the rational number $\frac{14587}{1250}$ will terminate after
(a) one decimal place
(b) two decimal places
(c) three decimal places
(d) four decimal places

SOL: www.cbse.site/ma/am110

11. $2.\overline{35}$ is
(a) an integer
(b) a rational number
(c) an irrational number
(d) a natural number

SOL: www.cbse.site/ma/am111

12. $2\sqrt{3}$ is
(a) an integer
(b) a rational number
(c) an irrational number
(d) a whole number

SOL: www.cbse.site/ma/am112

13. For some integer q, every odd integer is of the form
(a) q
(b) $q+1$
(c) $2q$
(d) $2q+1$

SOL: www.cbse.site/ma/am113

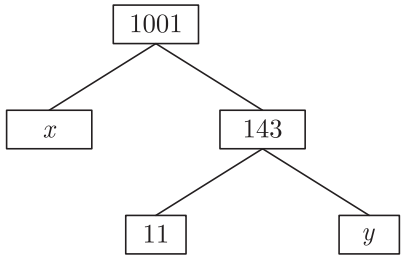
14. If two positive integers a and b are written as $a = x^3y^2$ and $b = xy^3$, where x, y are prime numbers, then HCF (a, b) is
(a) xy
(b) xy^2
(c) x^3y^3
(d) x^2y^2

SOL: www.cbse.site/ma/am114

15. If two positive integers p and q can be expressed as $p = ab^2$ and $q = a^3b$; where a, b being prime numbers, then LCM (p, q) is equal to
(a) ab
(b) a^2b^2
(c) a^3b^2
(d) a^3b^3

SOL: www.cbse.site/ma/am115

16. The values of x and y in the given figure are



(a) 7, 13
(b) 13, 7
(c) 9, 12
(d) 12, 9

SOL: www.cbse.site/ma/am116

17. If p_1 and p_2 are two odd prime numbers such that $p_1 > p_2$, then $p_1^2 - p_2^2$ is
(a) an even number
(b) an odd number
(c) an odd prime number
(d) a prime number

SOL: www.cbse.site/ma/am117

18. The rational number of the form $\frac{p}{q}$, $q \neq 0$, p and q are positive integers, which represents $0.1\overline{34}$ i.e., (0.1343434 .....) is
(a) $\frac{134}{999}$

(b) $\frac{134}{990}$

(c) $\frac{133}{999}$

(d) $\frac{133}{990}$

SOL: www.cbse.site/ma/am118

19. Which of the following will have a terminating decimal expansion?

(a) $\frac{77}{210}$

(b) $\frac{23}{30}$

(c) $\frac{125}{441}$

(d) $\frac{23}{8}$

SOL: www.cbse.site/ma/am119

20. If $x = 0.\overline{7}$, then $2x$ is

(a) $1.\overline{4}$

(b) $1.\overline{5}$

(c) $1.\overline{54}$

(d) $1.\overline{45}$

SOL: www.cbse.site/ma/am120

21. Which of the following rational number have non-terminating repeating decimal expansion?

(a) $\frac{31}{3125}$

(b) $\frac{71}{512}$

(c) $\frac{23}{200}$

(d) None of these

SOL: www.cbse.site/ma/am121

22. The number $3^{13} - 3^{10}$ is divisible by

(a) 2 and 3

(b) 3 and 10

(c) 2, 3 and 10

(d) 2, 3 and 13

SOL: www.cbse.site/ma/am122

23. The least number which is a perfect square and is divisible by each of 16, 20 and 24 is

(a) 240

(b) 1600

(c) 2400

(d) 3600

SOL: www.cbse.site/ma/am123

24. $n^2 - 1$ is divisible by 8, if n is

(a) an integer

(b) a natural number

(c) an odd integer

(d) an even integer

SOL: www.cbse.site/ma/am124

25. When 2^{256} is divided by 17 the remainder would be

(a) 1

(b) 16

(c) 14

(d) None of these

SOL: www.cbse.site/ma/am125

26. **Assertion :** $\frac{13}{3125}$ is a terminating decimal fraction.

Reason : If $q = 2^m 5^n$ where m, n are non-negative integers, then $\frac{p}{q}$ is a terminating decimal fraction.

(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

(c) Assertion (A) is true but reason (R) is false.

(d) Assertion (A) is false but reason (R) is true.

SOL: www.cbse.site/ma/am126

27. **Assertion :** 34.12345 is a terminating decimal fraction.

Reason : Denominator of 34.12345, when expressed

in the form $\frac{p}{q}$, $q \neq 0$, is of the form $2^m \times 5^n$, where m and n are non-negative integers.

(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

(c) Assertion (A) is true but reason (R) is false.

(d) Assertion (A) is false but reason (R) is true.

SOL: www.cbse.site/ma/am127

28. **Assertion :** The HCF of two numbers is 5 and their product is 150, then their LCM is 30

Reason : For any two positive integers a and b, $\text{HCF}(a,b) + \text{LCM}(a,b) = a \times b$.

(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

(c) Assertion (A) is true but reason (R) is false.

(d) Assertion (A) is false but reason (R) is true.

SOL: www.cbse.site/ma/am128

29. a and b are two positive integers such that the least prime factor of a is 3 and the least prime factor of b is 5. Then the least prime factor of $(a+b)$ will be

(a) 1

(b) 2

(c) 3

(d) 4

SOL: www.cbse.site/ma/am129

30. Select the least number that is divisible by all numbers between 1 and 10 (both inclusive).

(a) 2520

(b) 5040

(c) 1010

(d) 2020

SOL: www.cbse.site/ma/am130

31. The number $\frac{7}{75}$ will have -

(a) non-terminating repeating decimal expansion.

(b) terminating decimal expansion.

(c) non-terminating non repeating decimal expansion.

(d) terminating non repeating decimal expansion

SOL: www.cbse.site/ma/am131

32. The decimal representation of $\frac{21}{16 \times 15}$ will

(a) terminate after 2 decimal place

(b) terminate after 3 decimal place

(c) terminate after 4 decimal places

(d) terminate after 5 decimal places

SOL: www.cbse.site/ma/am132

33. The sum of exponents of prime factors in the prime-factorisation of 1764 is

(a) 3

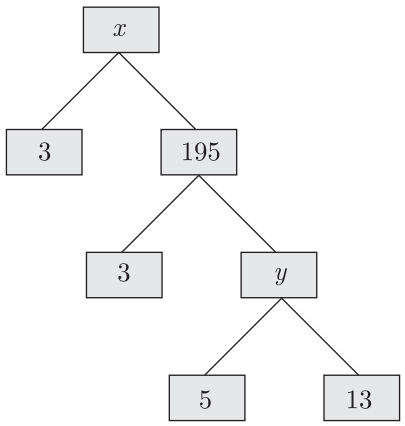
(b) 4

(c) 5

(d) 6

SOL: www.cbse.site/ma/am133

34. In the given factor tree what is the composite number x?



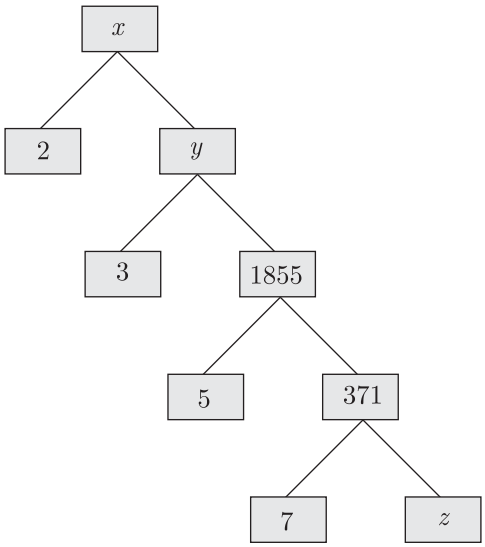
(a) 65
(b) 585
(c) 130
(d) 195

SOL: www.cbse.site/ma/am134

35. The HCF and LCM of 378, 180 and 420 of will be
(a) 6 and 3980
(b) 12 and 3780
(c) 6 and 3780
(d) 12 and 3980

SOL: www.cbse.site/ma/am135

36. In the given factor tree what is the composite number x?



(a) 53
(b) 11130
(c) 5565
(d) 19438

SOL: www.cbse.site/ma/am136

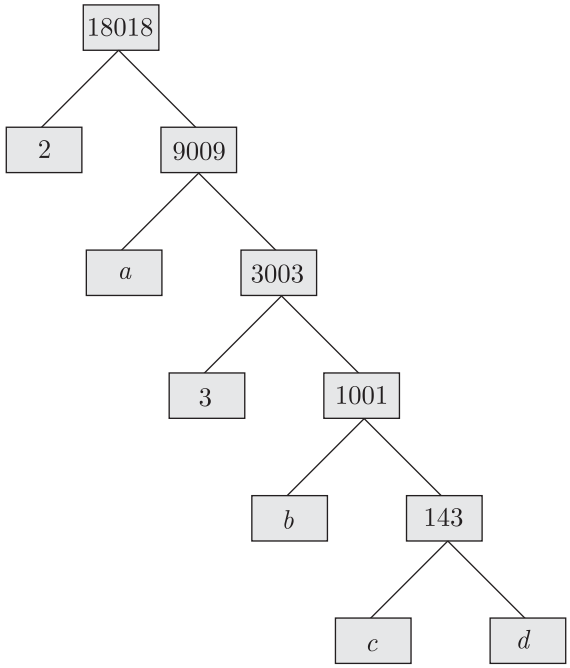
37. What is the HCF of smallest primer number and the smallest composite number?
(a) 2
(b) 4
(c) 6
(d) 8

SOL: www.cbse.site/ma/am137

38. If HCF(336, 54) = 6, LCM(336, 54) will be
(a) 2024
(b) 3024
(c) 1012
(d) 1512

SOL: www.cbse.site/ma/am138

39. What are the missing numbers c and d in the given factor tree:



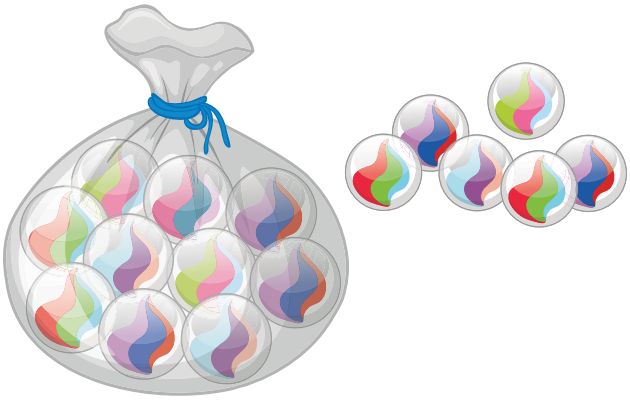
(a) 3 and 7
(b) 13 and 11
(c) 6 and 9
(d) 5 and 4

SOL: www.cbse.site/ma/am139

COMPETENCEY BASED QUESTIONS

Direction For Question : (40-41)

When the marbles in a bag are divided evenly between two friends, there is one marble left over. When the same marbles are divided evenly among three friends, there is one marble left over. When the marbles are divided evenly among five friends, there is one marble left over.



40. What is the least possible number of marbles in the bag?

(a) 31

(b) 30

(c) 32

(d) 34

SOL: www.cbse.site/ma/am140

41. What is another possible number of marbles in the bag?

(a) 31

(b) 61

(c) 52

(d) 34

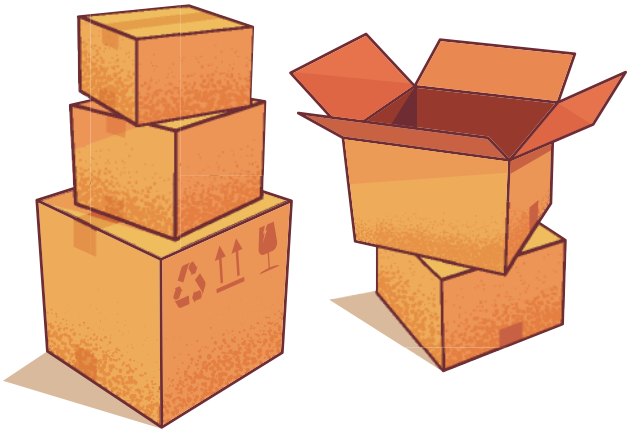
SOL: www.cbse.site/ma/am140

Direction For Question : (42-45)

An online shopping website sells 10 types of items which are packed into various sizes of cartons which are given below.

Carton type	Inner Dimensions (L × W)cm^2
Small	6 × 8
Medium	12 × 24
Large	24 × 36
Extra large	36 × 48
XXL	48 × 96

The company places supporting thermocol sheets inside every package along the edges. The company thought of procuring same sized sheets for all types of cartons.



42. What should be the maximum size of the sheet that fits into all type of cartons?

(a) 6 by 4

(b) 6 by 2

(c) 4 by 2

(d) 4 by 4

SOL: www.cbse.site/ma/am141

43. How many such sheet sizes are possible?

(a) 1

(b) 2

(c) 3

(d) 4

SOL: www.cbse.site/ma/am141

44. The company later introduced a new size of carton called semi large whose measurements are 14 × 15. Whether the existing maximum size sheet fits this shape?

(a) yes it will fit

(b) It will not fit because 14 is not multiple of 6 and

15 is not multiple of 4.

(c) It will not fit because 14 × 15 is not multiple of 6 × 4.

(d) can't say

SOL: www.cbse.site/ma/am141

45. What should have been the size of the semi large carton (which is larger than medium carton but smaller than large carton) so that the maximum sized sheet remains same?

(a) 12 × 28

(b) 18 × 28

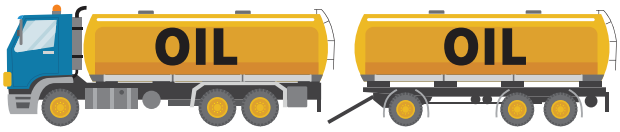
(c) 12 × 24

(d) 18 × 24

SOL: www.cbse.site/ma/am141

Direction For Question : (46-47)

Two oil tankers contain 825 litres and 675 litres of kerosene oil respectively.



46. What is the maximum capacity of a container which can measure the kerosene oil of both the tankers when used an exact number of times?

(a) 50 litre

(b) 75 litre

(c) 150 litre

(d) 225 litre

SOL: www.cbse.site/ma/am142

47. How many times we have to use container for both tanker to fill ?

(a) 11 and 9 times

(b) 22 and 18 times

(c) 10 and 8 times

(d) 8 and 6 times

SOL: www.cbse.site/ma/am142

Direction For Question : (48-49)

Taniya have 54 football cards, 72 volleyball cards, and 63 basketball cards and she want to put them in a binder. Each page of the binder should have cards from a single sport, and there should be the same number of cards on each page.

48. What is the greatest number of cards, Taniya can put on a page?

(a) 9

(b) 12

(c) 15

(d) 18

SOL: www.cbse.site/ma/am143

49. How many pages will Taniya need for each sport?

(a) for football 6, for volleyball 8 and for basketball 7 pages

(b) for football 9, for volleyball 7 and for basketball 6 pages

(c) for football 7, for volleyball 6 and for basketball 8 pages

(d) for football 9, for volleyball 6 and for basketball 7 pages

SOL: www.cbse.site/ma/am143

50. Tina has 39 pairs of headphones and 13 music players. Tina wants to sell all of the headphones and music players in identical packages. What is the greatest number of packages Tina can make?

(a) 4
(b) 9
(c) 13
(d) 26

SOL: www.cbse.site/ma/am144

Direction For Question : (51-52)

A patient admitted to the Jaipur Golden hospital was prescribed a pain medication to be given every 4 hr and an antibiotic to be given every 5 hr. Bandages applied to the patient's external injuries needed changing every 12 hr. The nurse changed the bandages and gave the patient both medications at 6:00 A.M. Monday morning.

51. How many hours will pass before the patient is given both medications and has his bandages changed at the same time?
(a) 60 hours
(b) 40 hours
(c) 20 hours
(d) 90 hours

SOL: www.cbse.site/ma/am145

52. What day and time will this be?
(a) Wednesday at 8 PM
(b) Wednesday at 6 PM
(c) Thursday at 6 PM
(d) Thursday at 8 PM

SOL: www.cbse.site/ma/am145

53. A tile floor is to be made from 10 inch, 12 inch, and 15 inch square tiles. A design is made by alternating rows with different size tiles. The first row uses only 10 inch tiles, the second row uses only 12 inch tiles, and the third row uses only 15 inch tiles. Neglecting the grout seams, what is the shortest length of floor space that can be covered evenly by each row?

(a) 20 inch
(b) 39 inch
(c) 60 inch
(d) 10 inch

SOL: www.cbse.site/ma/am146

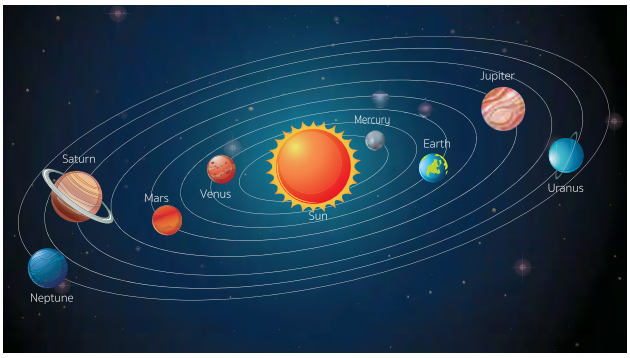
54. The traffic lights at three different road crossings change after every 48 seconds, 72 seconds and 108 seconds respectively. If they change simultaneously at 7 AM, at what time will they change simultaneously again?

(a) 7 min 12 sec
(b) 8 min 12 sec
(c) 6 mni 24 sec
(d) 9 min 24 sec

SOL: www.cbse.site/ma/am147

55. Mercury, Venus, and Earth revolve around the Sun

approximately once every 3 months, 7 months, and 12 months, respectively. If the planets begin lined up, what is the minimum number of months required for them to be aligned again? (Assume that the planets lie roughly in the same plane.)



(a) 4 years
(b) 6 year
(c) 7 years
(d) 8 year

SOL: www.cbse.site/ma/am148

56. Lina is preparing dinner plates. She has 12 pieces of chicken and 16 rolls. If she wants to make all the plates identical without any food left over, what is the greatest number of plates Lina can prepare ?

(a) 1 plate
(b) 2 plate
(c) 3 plate
(d) 4 plate

SOL: www.cbse.site/ma/am149

57. In a morning walk, three persons step off together. Their steps measure 75 cm, 80 cm and 90 cm respectively. What is the minimum distance each should walk so that all can cover the same distance in complete steps?

(a) 38 m
(b) 30 m
(c) 32 m
(d) 36 m

SOL: www.cbse.site/ma/am150

58. Four satellites revolve around the earth once every 6, 8, 10, and 15 hr, respectively. If the satellites are initially lined up, how many hours must pass before they will again be lined up?

(a) 90 hours
(b) 200 hours
(c) 120 hours
(d) 180 hours

SOL: www.cbse.site/ma/am151

59. At a train station, the blue line has a train leaving every 15 minutes, the green line has a train leaving every 24 minutes, and the red line every 10 minutes. If the first train on each line leaves at the same time, how often will there be trains on all three lines departing the train station at the same time?

(a) 60 minute
(b) 90 minute
(c) 120 minute
(d) 150 minute

SOL: www.cbse.site/ma/am152

60. Jasmin is completing an art project. She has two pieces of construction paper. The first piece is 44 centimeters wide and the second piece is 33 centimeters wide. Jasmin wants to cut the paper into strips that are equal in width and are as wide as possible. How wide should Jasmin cut each strip?

(a) 10 cm
(b) 11 cm
(c) 22 cm
(d) 33 cm

SOL: www.cbse.site/ma/am153

Direction For Question : (61-65)

Ashish supplies bread and jams to a hospital and a school. Bread and jam are supplied in equal number of pieces. Bread comes in a packet of 8 pieces and Jam comes in a pack of 6 pieces.

On a particular day, Ashish has supplied x packets of bread and y packets of jam to the school. On the same day, Ashish has supplied $3x$ packets of bread along with sufficient packets of jam to hospital. It is known that the number of students in the school are between 500 and 550.

61. How many students are there in school?
(a) 544
(b) 504
(c) 608
(d) 456

SOL: www.cbse.site/ma/am154

62. How many packets of bread are supplied in the school?
(a) 94
(b) 63
(c) 74
(d) 84

SOL: www.cbse.site/ma/am154

63. How many packets of jams are supplied in the school?
(a) 129
(b) 64

(c) 74
(d) 84

SOL: www.cbse.site/ma/am154

64. How many packets of bread are supplied in the hospital?
(a) 189
(b) 64
(c) 74
(d) 124

SOL: www.cbse.site/ma/am154

65. How many packets of jams are supplied in the hospital?
(a) 120
(b) 164
(c) 252
(d) 224

SOL: www.cbse.site/ma/am154

Direction For Question : (66-70)

Shalvi is a tuition teacher and teaches mathematics to some kids at her home. She is very innovative and always plan new games to make her students learn concepts.

Today, she has planned a prime number game. She announce the number 2 in her class and asked the first student to multiply it by a prime number and then pass it to second student. Second student also multiplied it by a prime number and passed it to third student. In this way by multiplying to a prime number the last student got 173250. He told this number to Shalvi in class. Now she asked some questions to the students as given below.

66. How many students are in the class?
(a) 6
(b) 7
(c) 8
(d) 9

SOL: www.cbse.site/ma/am155

67. What is the highest prime number used by student?
(a) 2
(b) 3
(c) 5
(d) 11

SOL: www.cbse.site/ma/am155

68. What is the least prime number used by students ?
(a) 2
(b) 3
(c) 5
(d) 11

SOL: www.cbse.site/ma/am155

69. Which prime number has been used maximum times ?
(a) 2
(b) 3
(c) 5
(d) 11

SOL: www.cbse.site/ma/am155

70. Which prime number has been used minimum times ?
(a) 2
(b) 3

(c) 7
(d) 11

SOL: www.cbse.site/ma/am155

Direction For Question : (71-75)

Mahesh works as a manager in a hotel. He has to arrange chairs in hall for a function. The hall has a certain number of chairs. Guests want to sit in different groups like in pairs, triplets, quadruplets, fives and sixes etc. Mahesh want to arrange chairs in such a way that there are no chair left after arrangement.

When Mahesh arranges chairs in such pattern like in 2's, 3's, 4's 5's and 6's then 1, 2, 3, 4 and 5 chairs are left respectively. But when he arranges in 11's, no chair will be left.

71. In the hall, how many chairs are available?
(a) 539
(b) 234
(c) 689
(d) 456

SOL: www.cbse.site/ma/am156

72. If one chair is removed, which arrangement is possible now?
(a) 2
(b) 3
(c) 4
(d) 5

SOL: www.cbse.site/ma/am156

73. If one chair is added to the original number of chairs, how many chairs will be left when arranged in 11's.
(a) 1
(b) 2
(c) 3
(d) 4

SOL: www.cbse.site/ma/am156

74. How many chairs will be left in original arrangement if same number of chairs are arranged in 7's?
(a) 1
(b) 2
(c) 3
(d) 0

SOL: www.cbse.site/ma/am156

75. How many chairs will be left in original arrangement if same number of chairs will be arranged in 9's?
(a) 8
(b) 7
(c) 8
(d) 4

SOL: www.cbse.site/ma/am156

Direction For Question : (76-80)

The Republic Day parade, first held in 1950, has been a yearly ritual since. The parade marches from the Rashtrapati Bhawan along the Rajpath in New Delhi. Several regiments of the army, navy, and air force, along with their bands, march to India Gate. The parade is presided over by the President of India, who is the Commander-in-Chief of the Indian Armed Forces. As he unfurls the tricolour, the national anthem is played. The regiments of the Armed Forces then start their march past. Prestigious awards like Kirti Chakra, Ashok Chakra, Paramvir Chakra and Vir Chakra are given out by the President. Nine to twelve different regiments of the Indian Army, in addition to the Navy and Air Force march toward India Gate along with their bands. Contingents of paramilitary forces and other civil forces also participate in the parade.

On 71th republic day parade, captain RS Meel is planing for parade of following two group:

(a) First group of Army troops of 624 members behind an army band of 32 members.

(b) Second group of CRPF troops with 468 soldiers behind the 228 members of bikers.

These two groups are to march in the same number of columns. This sequence of soldiers is followed by different states Jhanki which are showing the culture of the respective states.

76. What is the maximum number of columns in which the army troop can march?

(a) 8 (b) 16

(c) 4 (d) 32

SOL: www.cbse.site/ma/am157

77. What is the maximum number of columns in which the CRPF troop can march?

(a) 4

(b) 8

(c) 12

(d) 16

SOL: www.cbse.site/ma/am157

78. What is the maximum number of columns in which total army troop and CRPF troop together can march past?

(a) 2

(b) 4

(c) 6

(d) 8

SOL: www.cbse.site/ma/am157

79. What should be subtracted with the numbers of CRPF soldiers and the number of bikers so that their maximum number of column is equal to the maximum number of column of army troop?

(a) 4 Soldiers and 4 Bikers

(b) 4 Soldiers and 2 Bikers

(c) 2 Soldiers and 4 Bikers

(d) 2 Soldiers and 2 Bikers

SOL: www.cbse.site/ma/am157

80. What should be added with the numbers of CRPF soldiers and the number of bikers so that their maximum number of column is equal to the maximum number of column of army troop?

(a) 4 Soldiers and 4 Bikers

(b) 12 Soldiers and 12 Bikers

(c) 6 Soldiers and 6 Bikers

(d) 12 Soldiers and 6 Bikers

SOL: www.cbse.site/ma/am157

Direction For Question : (81-85)

Lavanya wants to organize her birthday party. She is very happy on her birthday. She is very health conscious, thus she decided to serve fruits only in her birthday party.

She has 36 apples and 60 bananas at home and decided to serve them. She wants to distribute fruits among guests. She does not want to discriminate among guests, so she decided to distribute fruits equally among all.

81. How many maximum guests Shalvi can invite?
(a) 12
(b) 120
(c) 6
(d) 180

SOL: www.cbse.site/ma/am158

82. How many apples and bananas will each guest get?
(a) 3 apple 5 banana
(b) 5 apple 3 banana
(c) 2 apple 4 banana
(d) 4 apple 2 banana

SOL: www.cbse.site/ma/am158

83. Lavanya decide to add 42 mangoes also. In this case how many maximum guests Lavanya can invite ?
(a) 12
(b) 120
(c) 6
(d) 180

SOL: www.cbse.site/ma/am158

84. How many total fruits will each guest get?
(a) 6 apple 5 banana and 6 mangoes
(b) 6 apple 10 banana and 7 mangoes
(c) 3 apple 5 banana and 7 mangoes
(d) 3 apple 10 banana and 6 mangoes

SOL: www.cbse.site/ma/am158

85. If Lavanya decide to add 3 more mangoes and remove 6 apple in total fruits, in this case how many maximum guests Lavanya can invite ?
(a) 12
(b) 30
(c) 15
(d) 24

SOL: www.cbse.site/ma/am158

Direction For Question : (86-90)

Amar, Akbar and Anthony are playing a game. Amar climbs 5 stairs and gets down 2 stairs in one turn. Akbar goes up by 7 stairs and comes down by 2 stairs every time. Anthony goes 10 stairs up and 3 stairs down each time.

Doing this they have to reach to the nearest point of 100th stairs and they will stop once they find it impossible to go forward. They can not cross 100th stair in anyway.

86. Who reaches the nearest point?
(a) Amar
(b) Akbar
(c) Anthony
(d) All together reach to the nearest point.

SOL: www.cbse.site/ma/am159

87. How many times can they meet in between on same stair ?
(a) 3
(b) 4
(c) 5
(d) No, they cannot meet in between on same stair.

SOL: www.cbse.site/ma/am159

88. Who takes least number of steps to reach near hundred?
(a) Amar
(b) Akbar
(c) Anthony
(d) All of them take equal number of steps.

SOL: www.cbse.site/ma/am159

89. What is the first stair where any two out of three will meet together?

(a) Amar and Akbar will meet for the first time on 15th stair.

(b) Akbar and Anthony will meet for the first time on 35th stair.

(b) Amar and Anthony will meet for the first time on 21th stair.

(d) Amar and Akbar will meet for the first time on 21th stair.

SOL: www.cbse.site/ma/am159

90. What is the second stair where any two out of three will meet together?

(a) Amar and Akbar will meet on 21th stair.

(b) Akbar and Anthony will meet on 35th stair.

(c) Amar and Anthony will meet on 21th stair.

(d) Amar and Anthony will meet on 35th stair.

SOL: www.cbse.site/ma/am159

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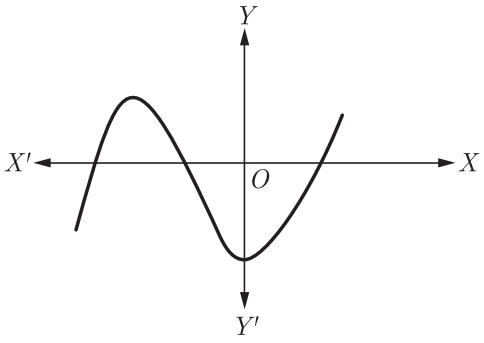
CHAPTER 2

POLYNOMIALS

1. If one zero of a quadratic polynomial (kx^2+3x+k) is 2, then the value of k is
(a) $\frac{5}{6}$
(b) $-\frac{5}{6}$
(c) $\frac{6}{5}$
(d) $-\frac{6}{5}$

Sol : www.cbse.site/ma/bm101

2. The graph of a polynomial is shown in Figure, then the number of its zeroes is



(a) 3
(b) 1
(c) 2
(d) 4

Sol : www.cbse.site/ma/bm102

3. The maximum number of zeroes a cubic polynomial can have, is
(a) 1
(b) 4
(c) 2
(d) 3

Sol : www.cbse.site/ma/bm103

4. If one zero of the quadratic polynomial x^2+3x+k is 2, then the value of k is
(a) 10
(b) -10
(c) -7
(d) -2

Sol : www.cbse.site/ma/bm104

5. The quadratic polynomial, the sum of whose zeroes is -5 and their product is 6, is
(a) x^2+5x+6
(b) x^2-5x+6
(c) x^2-5x-6
(d) $-x^2+5x+6$

Sol : www.cbse.site/ma/bm105

6. If one zero of the polynomial $(3x^2+8x+k)$ is the reciprocal of the other, then value of k is
(a) 3
(b) -3
(c) $\frac{1}{3}$
(d) $-\frac{1}{3}$

Sol : www.cbse.site/ma/bm106

7. The zeroes of the polynomial $x^2-3x-m(m+3)$ are
(a) $m, m+3$
(b) $-m, m+3$
(c) $m, -(m+3)$
(d) $-m, -(m+3)$

Sol : www.cbse.site/ma/bm107

8. The value of x , for which the polynomials x^2-1 and x^2-2x+1 vanish simultaneously, is
(a) 2

(b) -2
(c) -1
(d) 1

Sol : www.cbse.site/ma/bm108

9. If α and β are zeroes and the quadratic polynomial $f(x) = x^2 - x - 4$, then the value of $\frac{1}{\alpha} + \frac{1}{\beta} - \alpha\beta$ is
(a) $\frac{15}{4}$
(b) $-\frac{15}{4}$
(c) 4
(d) 15

Sol : www.cbse.site/ma/bm109

10. The value of the polynomial $x^8 - x^5 + x^2 - x + 1$ is
(a) positive for all the real numbers
(b) negative for all the real numbers
(c) 0
(d) depends on value of x

Sol : www.cbse.site/ma/bm110

11. Lowest value of $x^2 + 4x + 2$ is
(a) 0
(b) -2
(c) 2
(d) 4

Sol : www.cbse.site/ma/bm111

12. If the sum of the zeroes of the polynomial $f(x) = 2x^3 - 3kx^2 + 4x - 5$ is 6, then the value of k is
(a) 2
(b) -2
(c) 4
(d) -4

Sol : www.cbse.site/ma/bm112

13. If the square of difference of the zeroes of the quadratic polynomial $x^2 + px + 45$ is equal to 144, then the value of p is
(a) ± 9
(b) ± 12
(c) ± 15
(d) ± 18

Sol : www.cbse.site/ma/bm113

14. If one of the zeroes of the quadratic polynomial $(k-1)x^2 + kx + 1$ is -3, then the value of k is
(a) $\frac{4}{3}$
(b) $\frac{-4}{3}$
(c) $\frac{2}{3}$
(d) $-\frac{2}{3}$

Sol : www.cbse.site/ma/bm114

15. A quadratic polynomial, whose zeroes are -3 and 4, is
(a) $x^2 - x + 12$
(b) $x^2 + x + 12$
(c) $\frac{x^2}{2} - \frac{x}{2} - 6$
(d) $2x^2 + 2x - 24$

Sol : www.cbse.site/ma/bm115

16. If the zeroes of the quadratic polynomial $x^2 + (a+1)x + b$ are 2 and -3, then
(a) $a = -7, b = -1$
(b) $a = 5, b = -1$
(c) $a = 2, b = -6$
(d) $a = 0, b = -6$

Sol : www.cbse.site/ma/bm116

17. The zeroes of the quadratic polynomial $x^2 + 99x + 127$ are
(a) both positive
(b) both negative
(c) one positive and one negative
(d) both equal

Sol : www.cbse.site/ma/bm117

18. The zeroes of the quadratic polynomial x^2+kx+k where $k \neq 0$,
(a) cannot both be positive
(b) cannot both be negative
(c) are always unequal
(d) are always equal

Sol : www.cbse.site/ma/bm118

19. If the zeroes of the quadratic polynomial ax^2+bx+c, where $c \neq 0$, are equal, then
(a) c and a have opposite signs
(b) c and b have opposite signs
(c) c and a have same sign
(d) c and b have the same sign

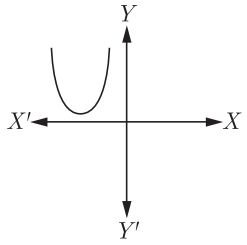
Sol : www.cbse.site/ma/bm119

20. If one of the zeroes of a quadratic polynomial of the form x^2+ax+b is the negative of the other, then it
(a) has no linear term and the constant term is negative.
(b) has no linear term and the constant term is positive.
(c) can have a linear term but the constant term is negative.
(d) can have a linear term but the constant term is positive.

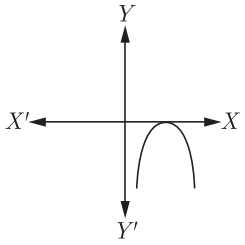
Sol : www.cbse.site/ma/bm120

21. Which of the following is not the graph of a quadratic polynomial?

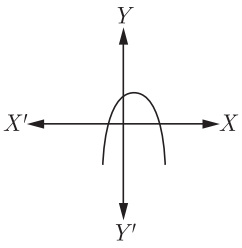
(a)



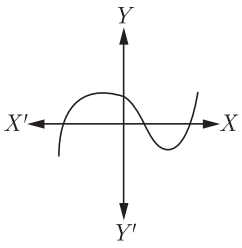
(b)



(c)



(d)



Sol : www.cbse.site/ma/bm121

22. **Assertion :** $(2-\sqrt{3})$ is one zero of the quadratic polynomial then other zero will be $(2+\sqrt{3})$.
Reason : Irrational zeros (roots) always occurs in pairs.
(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
(c) Assertion (A) is true but reason (R) is false.
(d) Assertion (A) is false but reason (R) is true.

Sol : www.cbse.site/ma/bm122

23. **Assertion :** If one zero of poly-nominal $p(x)=(k^2+4)x^2+13x+4k$ is reciprocal of other, then $k=2$.
Reason : If $(x-\alpha)$ is a factor of $p(x)$, then $p(\alpha)=0$ i.e. α is a zero of $p(x)$.
(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
(c) Assertion (A) is true but reason (R) is false.
(d) Assertion (A) is false but reason (R) is true.

Sol : www.cbse.site/ma/bm123

24. **Assertion :** $p(x)=14x^3-2x^2+8x^4+7x-8$ is a polynomial of degree 3.
Reason : The highest power of x in the polynomial $p(x)$ is the degree of the polynomial.
(a) Both assertion (A) and reason (R) are true and

reason (R) is the correct explanation of assertion (A).

(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

(c) Assertion (A) is true but reason (R) is false.

(d) Assertion (A) is false but reason (R) is true.

Sol : www.cbse.site/ma/bm124

25. **Assertion :** x^3+x has only one real zero.

Reason : A polynomial of n th degree must have n real zeroes.

(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

(c) Assertion (A) is true but reason (R) is false.

(d) Assertion (A) is false but reason (R) is true.

Sol : www.cbse.site/ma/bm125

26. **Assertion :** If both zeros of the quadratic polynomial $x^2-2kx+2$ are equal in magnitude but opposite in sign then value of k is ½.

Reason : Sum of zeros of a quadratic polynomial ax^2+bx+c is $\frac{-b}{a}$

(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

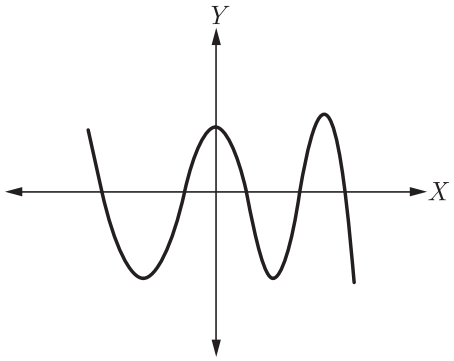
(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

(c) Assertion (A) is true but reason (R) is false.

(d) Assertion (A) is false but reason (R) is true.

Sol : www.cbse.site/ma/bm126

27. The graph of $y=p(x)$, where $p(x)$ is a polynomial in variable x, is as follows.



The number of zeroes of $p(x)$ is ..... .

(a) 2

(b) 3

(c) 4

(d) 5

Sol : www.cbse.site/ma/bm127

28. If one root of the equation $(k-1)x^2-10x+3=0$ is the reciprocal of the other then the value of k is .....

(a) 2

(b) 3

(c) 4

(d) 5

Sol : www.cbse.site/ma/bm128

29. If α and β are the roots of $ax^2-bx+c=0\,(a\neq 0)$, then value of $\alpha+\beta$ is

(a) $\frac{b}{a}$

(b) $\frac{a}{b}$

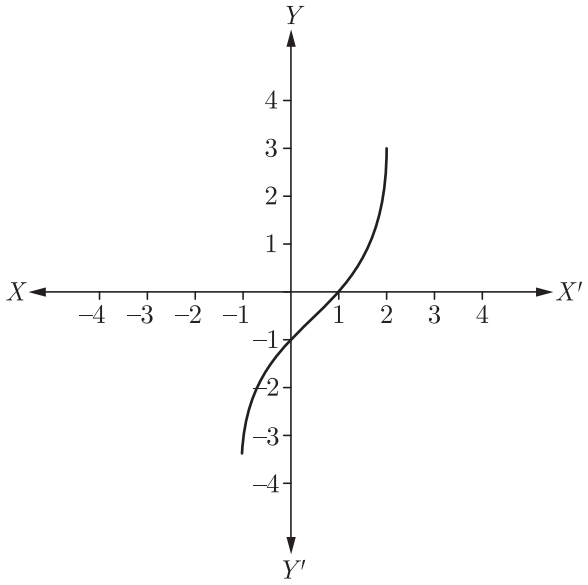
(c) $\frac{2a}{b}$

(d) $\frac{a}{2b}$

Sol : www.cbse.site/ma/bm129

30. In given figure, the graph of a polynomial $p(x)$ is

shown. The number of zeroes of $p(x)$ will be



(a) 1
(b) 2
(c) 3
(d) 4

Sol : www.cbse.site/ma/bm130

31. If sum of the zeroes of the quadratic polynomial $3x^2 - kx + 6$ is 3, then the value of k will be
(a) 1
(b) 4
(c) 6
(d) 9

Sol : www.cbse.site/ma/bm131

32. The zeroes of the polynomial $p(x) = 4x^2 - 12x + 9$ will be
(a) $\frac{3}{2}$ and $\frac{3}{2}$
(b) $\frac{2}{3}$ and $\frac{1}{3}$
(c) $\frac{2}{3}$ and $\frac{1}{3}$
(d) $\frac{1}{3}$ and $\frac{1}{3}$

Sol : www.cbse.site/ma/bm132

33. If -1 is a zero of the polynomial $f(x) = x^2 - 7x - 8$, then other zero is
(a) 4
(b) 8
(c) 1
(d) –4

Sol : www.cbse.site/ma/bm133

34. If α and β are the zeroes the polynomial $2x^2 - 4x + 5$, the value of $\alpha^2 + \beta^2$ is
(a) -7
(b) 1
(c) -1
(d) -6

Sol : www.cbse.site/ma/bm134

35. If zeroes of the polynomial $x^2 + 4x + 2a$ are a and $\frac{2}{a}$, then the value of a is
(a) 1
(b) 2
(c) 3
(d) 4

Sol : www.cbse.site/ma/bm135

36. Zeroes of $f(x) = x^2 - 2x$ are
(a) 2 and 4
(b) 1 and 3
(c) 0 and 2
(d) 0 and 4

Sol : www.cbse.site/ma/bm136

37. The zeroes of the quadratic polynomial $\sqrt{3}\,x^2 - 8x + 4\sqrt{3}$ are
(a) $2\sqrt{3}$ and $\sqrt{3}$
(b) $2\sqrt{3}$ and $\frac{1}{\sqrt{3}}$
(c) $\frac{1}{\sqrt{3}}$ and $\sqrt{3}$
(d) $\frac{2}{\sqrt{3}}$ and $2\sqrt{3}$

Sol : www.cbse.site/ma/bm137

38. If p and q are the zeroes of polynomial $f(x) = 2x^2 - 7x + 3$, the value of $p^2 + q^2$ will be
(a) $\frac{39}{5}$
(b) $\frac{5}{39}$
(c) $\frac{37}{4}$
(d) $\frac{4}{37}$

Sol : www.cbse.site/ma/bm138

39. The zeroes of polynomial $p(x) = ax^2 + bx + c$ are reciprocal of each other if
(a) $b = 2a$
(b) $c = b$
(c) $b = a$
(d) $c = a$

Sol : www.cbse.site/ma/bm139

40. If α and β are the zeroes the polynomial $2x^2 - 4x + 5$, the value of $(\alpha - \beta)^2$ is
(a) 2
(b) 1
(c) -1
(d) -6

Sol : www.cbse.site/ma/bm140

41. Select the quadratic polynomial whose zeroes are reciprocals of the zeroes of the polynomial $f(x) = ax^2 + bx + c$, $a \neq 0$, $c \neq 0$.
(a) $bx^2 + ax + c$
(b) $ax^2 + cx + b$
(c) $cx^2 + bx + a$
(d) $bx^2 + cx + a$

Sol : www.cbse.site/ma/bm141

42. Which of the following are the zeroes of the polynomial $p(x) = 2x^3 - 11x^2 + 17x - 6$.
(a) 2
(b) 3
(c) $\frac{1}{2}$
(d) Above all

Sol : www.cbse.site/ma/bm142

Direction For Question : (43-44)

A teacher asked 10 of his students to write a polynomial in one variable on a paper and then to handover the paper. The following were the answers given by the students :

$2x + 3$, $3x^2 + 7x + 2$, $4x^3 + 3x^2 + 2$, $x^3 + \sqrt{3x} + 7$, $7x + \sqrt{7}$, $5x^3 - 7x + 2$, $2x^2 + 3 - \frac{5}{x}$, $5x - \frac{1}{2}$, $ax^3 + bx^2 + cx + d$, $x + \frac{1}{x}$.

43. How many of the above ten, are not polynomials?
(a) 2
(b) 3
(c) 4
(d) 5

Sol : www.cbse.site/ma/bm143

44. How many of the above ten, are quadratic polynomials?
(a) 1
(b) 2
(c) 3
(d) 4

Sol : www.cbse.site/ma/bm143

45. Given that α and β are the zeroes of a quadratic polynomial such that $\alpha + \beta = 24$ and $\alpha - \beta = 8$. Select the quadratic polynomial having α and β as its zeroes.
(a) $x^2 - 128x + 24$
(b) $x^2 - 24x + 128$
(c) $x^2 + 24x - 128$
(d) $x^2 + 128x + 24$

Sol : www.cbse.site/ma/bm144

COMPETENCEY BASED QUESTIONS

46. R K Agrawal is designing a propylene tank in the shape of a cylinder with hemispherical ends. If the length of the cylinder is to be 20 unit larger than its radius and the volume is to be 3321π cubic unit,

then what is the radius?

(a) 5 unit
(b) 7 unit
(c) 9 unit
(d) 13 unit

Sol : www.cbse.site/ma/bm145

Direction For Question : (47-50)

For the box to satisfy certain requirements, its length must be three unit greater than the width, and its height must be two unit less than the width.

47. If width is taken as x, find the polynomial that represent volume of box.
(a) $6x^2+4x-12$
(b) $5x^2+3x-12$
(c) x^3+x^2-6x
(d) $4x^2+2x+4$

Sol : www.cbse.site/ma/bm146

48. Find the polynomial that represent the area of paper sheet used to make box.
(a) $6x^2+4x-12$
(b) $5x^2+3x-12$
(c) x^3+x^2-6x
(d) $4x^2+2x+4$

Sol : www.cbse.site/ma/bm146

49. If it must have a volume of 18 unit, what must be its length and height ?
(a) 6 and 1
(b) 5 and 2
(c) 6 and 2
(d) 5 and 3

Sol : www.cbse.site/ma/bm146

50. If box is made of a paper sheet which cost is ₹ 100 per square unit, what is the cost of paper?
(a) ₹ 2100
(b) ₹ 4200
(c) ₹ 2800
(d) ₹ 5400

Sol : www.cbse.site/ma/bm146

Direction For Question : (51-54)

The volume of water in a rectangular, in-ground, swimming pool is given by $V(x)=x^3+11x^2+24x$ where $V(x)$ is the volume in cubic feet when the water is x ft high.

51. What is the dimension of base of pool?
(a) $x+3$ and $x+8$
(b) $x+4$ and $x+7$
(c) $x+4$ and $x+8$

(d) $x+3$ and $x+7$

Sol : www.cbse.site/ma/bm147

52. What is the volume of pool when $x=3$ ft?
(a) 298 ft^3
(b) 148 ft^3
(c) 268 ft^3
(d) 198 ft^3

Sol : www.cbse.site/ma/bm147

53. If the volume is 100 ft^3 of water, what is the height x ?
(a) 2 ft
(b) 3 ft
(c) 4 ft
(d) 5 ft

Sol : www.cbse.site/ma/bm147

54. If the maximum capacity of the pool is 520 ft^3 what is the maximum depth?
(a) 2 ft
(b) 3 ft
(c) 4 ft
(d) 5 ft

Sol : www.cbse.site/ma/bm147

Direction For Question : (55-56)

Frozen specimens are stored in a cubic metal box that is x inches on each side. The box is surrounded by a 2 inch thick layer of foam insulation.

55. Which of the following polynomial function $V(x)$ gives the total volume in cubic inches for the box and insulation?
(a) $x^3+48x^2+12x+32$
(b) $x^3+48x^2+12x+64$
(c) $x^3+12x^2+48x+64$
(d) $x^3+12x^2+48x+32$

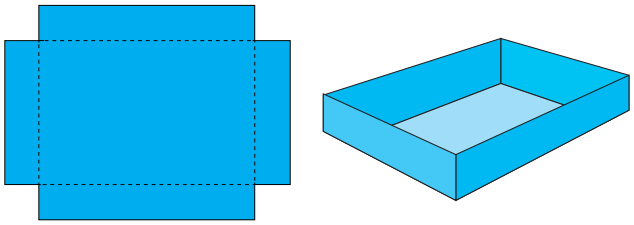
Sol : www.cbse.site/ma/bm148

56. What is the total volume if x is 10 inches?
(a) 1468 in^3
(b) 2744 in^3
(c) 1972 in^3
(d) 2146 in^3

Sol : www.cbse.site/ma/bm148

Direction For Question : (57-58)

A metalworker makes an overflow pan by cutting equal squares with sides of length x from the corners of a 30 cm by 20 cm piece of aluminium, as shown in the figure. The sides are then folded up and the corners sealed.



57. Which of the following polynomial function $V(x)$ gives the volume of the pan?
(a) $4x^3-60x^2+450x$
(b) $4x^3-100x^2+600x$
(c) $4x^3-50x^2+600x$
(d) $4x^3-60x^2+500x$

Sol : www.cbse.site/ma/bm149

58. What is volume of the pan if the height is 6 cm?
(a) 518 cm^3
(b) 746 cm^3
(c) 648 cm^3
(d) 864 cm^3

Sol : www.cbse.site/ma/bm149

Direction For Question : (59-60)

Suppose that the pan in previous example is formed from a square piece of aluminium that is 30 cm on each side.

59. Which of the following polynomial function $V(x)$

gives the volume in cubic cm?

(a) $4x^3 - 120x^2 + 900x$

(b) $4x^3 - 900x^2 + 600x$

(c) $4x^3 + 120x^2 + 600x$

(d) $4x^3 - 900x^2 + 300x$

Sol : www.cbse.site/ma/bm150

60. The cost is Rs 5 per square cm of aluminum used in the finished pan. Which of the following polynomial function $C(x)$ gives the cost?

(a) $20x^2 + 2500$

(b) $20x^2 + 3500$

(c) $20x^2 + 4500$

(d) $-20x^2 + 4500$

Sol : www.cbse.site/ma/bm150

Direction For Question : (61-62)

The discharge rate of a river is a measure of the river's water flow as it empties into a lake, sea, or ocean. The rate depends on many factors, but is primarily influenced by the precipitation in the surrounding area and is often seasonal.

Suppose the discharge rate of the Brhamputra River was modelled by $D(m) = -m^4 + 22m^3 - 147m^2 + 317m + 150$ where $D(m)$ represents the discharge rate in thousands of cubic meters of water per second in month m.

$(m = 1 \to \text{Jan}, m = 2 \to \text{Feb})$

61. What was the discharge rate in June (summer heat) ?

(a) 166 thousand cubic meter per second

(b) 146 thousand cubic meter per second

(c) 246 thousand cubic meter per second

(d) 216 thousand cubic meter per second

Sol : www.cbse.site/ma/bm151

62. Is the discharge rate higher in June or October?

(a) The discharge rate in October is 420 thousand cubic meter per second which is much higher than discharge in June.

(b) The discharge rate in October is 120 thousand cubic meter per second which is much lower than discharge in June.

(c) The discharge rate in October is 620 thousand cubic meter per second which is much higher than discharge in June.

(d) The discharge rate in October is 60 thousand cubic meter per second which is much lower than discharge in June.

Sol : www.cbse.site/ma/bm151

Direction For Question : (63-65)

A company makes rectangular shaped bird cages with height b inches and square bottoms. The volume of these cages is given by the function $V = b^3 - 6b^2 + 9b$

63. Which of the following expression the length of each side of the square bottom?

(a) $(b-2)$

(b) $(b-3)$

(c) $(b-4)$

(d) $(b-5)$

Sol : www.cbse.site/ma/bm152

64. What is the volume of a cage with a height of 18 inches?

(a) 3050 in^2

(b) 2050 in^2

(c) 1050 in^2

(d) 4050 in^2

Sol : www.cbse.site/ma/bm152

65. What is the volume of a cage with a height of 15 inches?

(a) 2160 in^2

(b) 2250 in^2

(c) 1150 in^2

(d) 4350 in^2

Sol : www.cbse.site/ma/bm152

Direction For Question : (66-67)

An independent marketing research agency has determined that the best box for breakfast cereal has a height that is 6 inches larger than its thickness and a width that is 5 inches larger than its thickness.

66. If we let the thickness be x inches, select the polynomial function $V(x)$ that gives the total volume.

(a) x^3+30x^2+11x

(b) x^3+11x^2+30x

(c) x^3+15x^2+20x

(d) x^3+20x^2+15x

Sol : www.cbse.site/ma/bm153

67. If such a box is to have a volume of 112 $inches^3$, then what should the thickness be?

(a) 1 inch

(b) 2 inch

(c) 3 inch

(d) 4 inch

Sol : www.cbse.site/ma/bm153

68. The number of soda cans S needed to build a square pyramid display with n levels is given by the function $L(n)=\frac{1}{3}n^3+\frac{1}{2}n^2+\frac{1}{6}n$. How many soda cans needed to build a square pyramid display with $n=6$ levels?

(a) 16

(b) 72

(c) 75

(d) 91

Sol : www.cbse.site/ma/bm154

Direction For Question : (69-70)

A bulk dog food storage bin with dimensions 2 feet by 3 feet by 4 feet needs to be increased in size to hold five times as much food as the current bin. Assume

each dimension is increased by the same amount.

69. Let x be the amount by which dimension is increased. Write of the following function represents the volume of the new bin?

(a) $x^3+36x^2+12x+16$

(b) $x^3+16x^2+9x+16$

(c) $x^3+26x^2+9x+24$

(d) $x^3+9x^2+26x+24$

Sol : www.cbse.site/ma/bm155

70. What is the dimensions of the new bin?

(a) 4 feet, 5 feet and 5 feet.

(b) 5 feet, 6 feet and 7 feet.

(c) 4 feet, 5 feet and 6 feet.

(d) 5 feet, 5 feet and 6 feet.

Sol : www.cbse.site/ma/bm155

Direction For Question : (71-74)

The cost to produce bottled spring water is given by $C(x)=16x-63$ where x is the number of thousands of bottles. The total income (revenue) from the sale of these bottles is given by the function $R(x)=-x^2+326x-7463$.

71. Since Profit = Revenue − Cost, the profit function would be

(a) $-x^2+210x-2400$

(b) $-x^2+210x-7400$

(c) $-x^2+310x-7400$

(d) $-x^2-310x+7400$

Sol : www.cbse.site/ma/bm156

72. How many bottles sold will produce the maximum profit?

(a) 125

(b) 155

(c) 175

(d) 185

Sol : www.cbse.site/ma/bm156

73. What is the maximum profit?

(a) Rs 14625

(b) Rs 16625

(c) Rs 22645

(d) Rs 14685

Sol : www.cbse.site/ma/bm156

74. What is the profit when 245 thousand bottles are sold?

(a) Rs 8525

(b) Rs 9225

(c) Rs 12645

(d) Rs 10685

Sol : www.cbse.site/ma/bm156

75. A bride-to-be has many girlfriends, but she has decided to have only five bridesmaids, including the maid of honor. The number of different ways n girlfriends can be chosen and assigned a position, such as maid of honor, first bridesmaid, second bridesmaid, and so on, is given by the polynomial function

$S(n) = n^5 - 10n^4 + 35n^3 - 50n^2 + 8n \quad n \geq 5$

How many ways the bride can select her bridesmaids if she chooses from $n = 5$ girlfriends?

(a) 40

(b) 45

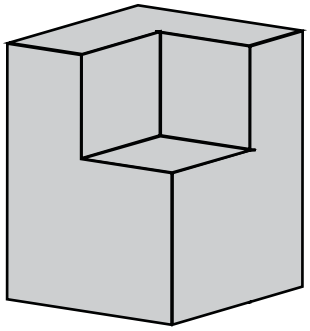
(c) 25

(d) 18

Sol : www.cbse.site/ma/bm157

Direction For Question : (76-78)

A cuboidal solid of base x by $x+1$ is shown in figure. Height of original solid is $x+2$. A small cuboidal solid of base $x-2$ by $x-2$ and height 2 is cut from this solid as shown in figure.



76. Which of the following is correct polynomial for the volume of remaining solid?

(a) $x^3 + x^2 - 10x - 8$

(b) $x^3 + x^2 - 10x + 8$

(c) $x^3 + x^2 + 10x + 8$

(d) $x^3 + x^2 + 10x - 8$

Sol : www.cbse.site/ma/bm158

77. What is the volume of remaining solid at $x = 8$ inch?

(a) 432 cubic inch

(b) 648 cubic inch

(c) 712 cubic inch

(d) 568 cubic inch

Sol : www.cbse.site/ma/bm158

78. What is the volume of remaining solid at $x = 10$ inch?

(a) 1242 cubic inch

(b) 1458 cubic inch

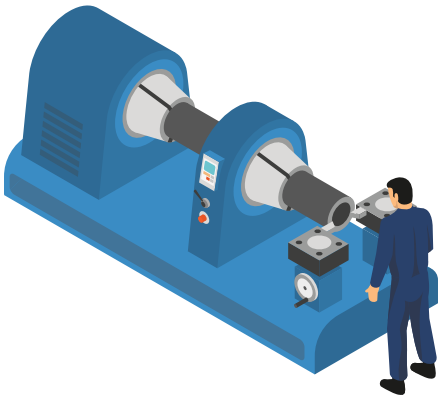
(c) 1712 cubic inch

(d) 1192 cubic inch

Sol : www.cbse.site/ma/bm158

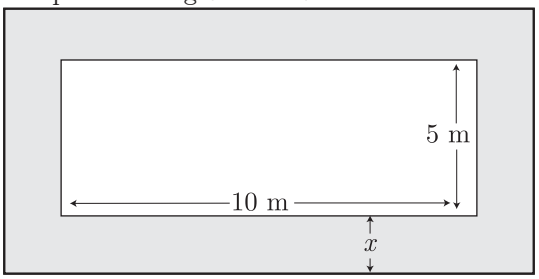
Direction For Question : (79-83)

RK Fabricators has got a order for making a frame for machine of their client. For which, they are using a AutoCAD software to create a constructible model that includes the relevant information such as dimensions of the frame and materials needed.



The frame will have a solid base and will be cut out

of a piece of steel. The final area of the frame should be 54 sq m. The digram of frame is shown below.



In order to input the right values in the AutoCAD software, the engineer needs to calculate some basic values.

79. What are the dimensions of the outer frame ?
(a) $(10+x)$ and $(5+x)$
(b) $(10-x)$ and $(5-x)$
(c) $(10+2x)$ and $(5+2x)$
(d) $(10-2x)$ and $(5-2x)$

Sol : www.cbse.site/ma/bm159

80. A metal sheet of minimum area is used to make the frame. What should be the minimum area of metal sheet before cutting ?
(a) $4x^2+30x+50$
(b) $x^2+27x+55$
(c) $5x^2+30$
(d) $4x^2+50$

Sol : www.cbse.site/ma/bm159

81. What is the area of required final metal frame ?
(a) $4x^2+30x+50\ \text{m}^2$
(b) $x^2+27x+55\ \text{m}^2$
(c) $4x^2+50x\ \text{m}^2$
(d) $4x^2+30x\ \text{m}^2$

Sol : www.cbse.site/ma/bm159

82. If the area of the frame is 54 sq m, what is the value of x ?
(a) 0.75 m
(b) 3.0 m
(c) 1.5 m
(d) 1.8 m

Sol : www.cbse.site/ma/bm159

83. What is the perimeter of the frame?
(a) 36 m
(b) 42 m
(c) 45 m
(d) 39 m

Sol : www.cbse.site/ma/bm159

Direction For Question : (84-88)

The Prime Minister's Citizen Assistance and Relief in Emergency Situations Fund was created on 28 March 2020, following the COVID-19 pandemic in India. The fund will be used for combating, and containment and relief efforts against the coronavirus outbreak and similar pandemic like situations in the future.

The allotment officer is trying to come up with a method to calculate fair division of funds across various affected families so that the fund amount and amount received per family can be easily adjusted based on daily revised numbers. The total fund allotted for a village is $x^3+6x^2+20x+9$. The officer has divided the fund equally among families of the village and each family receives an amount of x^2+2x+2. After distribution, some amount is left.

84. How many families are there in the village?
(a) $x+4$
(b) $x-3$
(c) $x-4$
(d) $x+3$

Sol : www.cbse.site/ma/bm160

85. If an amount of ₹1911 is left after distribution, what is value of x?
(a) 190
(b) 290
(c) 191
(d) 291

Sol : www.cbse.site/ma/bm160

86. How much amount does each family receive?
(a) 24490
(b) 34860
(c) 22540
(d) 36865

Sol : www.cbse.site/ma/bm160

87. What is the amount of fund allocated?
(a) ₹ 72 72 759
(b) ₹ 75 72 681
(c) ₹ 69 72 846
(d) ₹ 82 74 888

Sol : www.cbse.site/ma/bm160

88. How many families are there in the village?
(a) 191
(b) 98
(c) 187
(d) 195

Sol : www.cbse.site/ma/bm160

Direction For Question : (89-93)

An barrels manufacturer can produce up to 300 barrels per day. The profit made from the sale of these barrels can be modelled by the function $P(x) = -10x^2 + 3500x - 66000$ where $P(x)$ is the profit in rupees and x is the number of barrels made and sold.

Based on this model answer the following questions:

89. When no barrels are produce what is a profit loss?
(a) ₹ 22000
(b) ₹ 66000
(c) ₹ 11000
(d) ₹ 33000

Sol : www.cbse.site/ma/bm161

90. What is the break even point ? (Zero profit point is called break even)
(a) 10 barrels
(b) 30 barrels
(c) 20 barrels
(d) 100 barrels

Sol : www.cbse.site/ma/bm161

91. What is the profit/loss if 175 barrels are produced
(a) Profit 266200
(b) Loss 266200
(c) Profit 240250
(d) Loss 240250

Sol : www.cbse.site/ma/bm161

92. What is the profit/loss if 400 barrels are produced
(a) Profit ₹ 466200
(b) Loss ₹ 266000
(c) Profit ₹ 342000
(d) Loss ₹ 342000

Sol : www.cbse.site/ma/bm161

93. What is the maximum profit which can manufacturer earn?

(a) ₹ 240250

(b) ₹ 480500

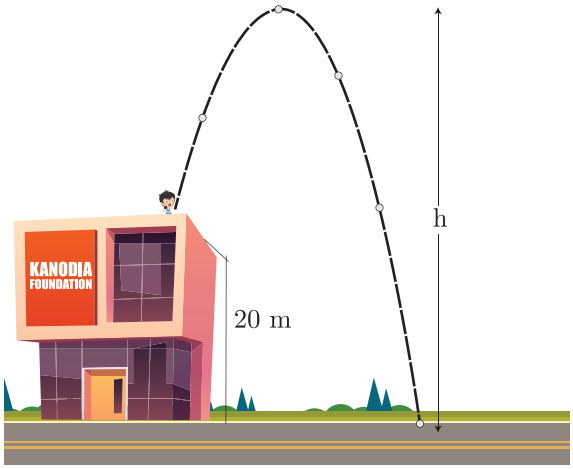
(c) ₹ 680250

(d) ₹ 240250

Sol : www.cbse.site/ma/bm161

Direction For Question : (94-98)

Lavanya throws a ball upwards, from a rooftop, which is 20 m above from ground. It will reach a maximum height and then fall back to the ground. The height of the ball from the ground at time t is h , which is given by $h = -4t^2 + 16t + 20$.



94. What is the height reached by the ball after 1 second?

(a) 64 m

(b) 128 m

(c) 32 m

(d) 20 m

Sol : www.cbse.site/ma/bm162

95. What is the maximum height reached by the ball?

(a) 54 m

(b) 44 m

(c) 36 m

(d) 18 m

Sol : www.cbse.site/ma/bm162

96. How long will the ball take to hit the ground?

(a) 4 seconds

(b) 3 seconds

(c) 5 seconds

(d) 6 seconds

Sol : www.cbse.site/ma/bm162

97. What are the two possible times to reach the ball at the same height of 32 m?

(a) 1 and 3 seconds

(b) 1 and 4 seconds

(c) 1 and 2 seconds

(d) 1 and 5 seconds

Sol : www.cbse.site/ma/bm162

98. Where is the ball after 5 seconds ?

(a) at the ground

(b) rebounds

(c) at highest point

(d) fall back

Sol : www.cbse.site/ma/bm162

Direction For Question : (99-103)

Pyramid, in architecture, a monumental structure constructed of or faced with stone or brick and having a rectangular base and four sloping triangular sides meeting at an apex. Pyramids have been built at various times in Egypt, Sudan, Ethiopia, western Asia, Greece, Cyprus, Italy, India, Thailand, Mexico, South America, and on some islands of the Pacific Ocean. Those of Egypt and of Central and South America are the best known.

The volume and surface area of a pyramid with a square base of area a^2 and height h is given by

$$V = \frac{ha^2}{3} \text{ and } S = a^2 + 2a\sqrt{\left(\frac{a}{2}\right)^2 + h^2}$$

A pyramid has a square base and a volume of $3y^3 + 18y^2 + 27y$ cubic units.

99. If its height is y, then what polynomial represents the length of a side of the square base ?

(a) $9(y+3)$

(b) $9(y+3)^2$

(c) $3(y+3)$

(d) $3(y+3)^2$

Sol : www.cbse.site/ma/bm163

100. If area of base is 576 metre, what is the side of base?

(a) 24 metre

(b) 16 metre

(c) 13 metre

(d) 12 metre

Sol : www.cbse.site/ma/bm163

101. What is the height of pyramid at above area of base?

(a) 4 metre

(b) 6 metre

(c) 5 metre

(d) 12 metre

Sol : www.cbse.site/ma/bm163

102. What is the ratio of length of side to the height ?

(a) $\frac{1}{5}$

(b) $\frac{2}{5}$

(c) $\frac{5}{24}$

(d) $\frac{24}{5}$

Sol : www.cbse.site/ma/bm163

103. What is surface area of pyramid ?

(a) 800 m^2

(b) 2400 m^2

(c) 1200 m^2

(d) 1600 m^2

Sol : www.cbse.site/ma/bm163

Direction For Question : (104-108)

Underground water tank is very popular in India. It is usually used for large water tank storage and can be built cheaply using cement-like materials. Underground water tank are typically chosen by people who want to save space. The water in the underground water tank is not affected by extreme weather conditions. The underground water tank maintain cool temperatures in both winter and summer.

A builder wants to build a tank to store water in an apartment. The volume of the rectangular tank will be modelled by $V(x) = x^3 + x^2 - 4x - 4$.

104. He planned in such a way that its base dimensions are $(x+1)$ and $(x+2)$. How much he has to dig ?

(a) $(x+1)$

(b) $(x-2)$

(c) $(x-3)$

(d) $(x+2)$

Sol : www.cbse.site/ma/bm164

105. If $x=4$ meter, what is the volume of the water tank?
(a) 30 m^3
(b) 20 m^3
(c) 15 m^3
(d) 60 m^3

Sol : www.cbse.site/ma/bm164

106. If $x=4$ and the builder wants to paint the entire inner portion on the water tank, what is the total area to be painted ?
(a) 52 m^2
(b) 96 m^2
(c) 208 m^2
(d) 104 m^2

Sol : www.cbse.site/ma/bm164

107. If the cost of paint is ₹ 25/ per square metre, what is the cost of painting ?
(a) ₹ 3900
(b) ₹ 2600
(c) ₹ 1300
(d) ₹ 5200

Sol : www.cbse.site/ma/bm164

108. What is the storage capacity of this water tank ?
(a) 3000 litre
(b) 6000 litre
(c) 60000 litre
(d) 30000 litre

Sol : www.cbse.site/ma/bm164

109. If α and β are the zeroes the polynomial $2x^2-4x+5$, the value of $\frac{1}{\alpha^2}+\frac{1}{\beta^2}$ is
(a) $\frac{4}{25}$
(b) $-\frac{4}{25}$
(c) $\frac{4}{5}$
(d) $-\frac{4}{5}$

Solution is given in hard book.

110. The sum and product of zeroes of a quadratic polynomial are 6 and 9 respectively. The quadratic polynomial will be
(a) x^2+9x-6
(b) x^2+6x+9
(c) x^2-6x+9
(d) x^2+6x-9

Solution is given in hard book.

111. Select the quadratic polynomial whose sum and product of a the zeroes are $\frac{21}{8}$ and $\frac{5}{16}$ respectively
(a) $16x^2-42x+5$
(b) $\frac{1}{16}(16x^2-42x+5)$
(c) $\frac{1}{12}(16x^2+42x+5)$
(d) $\frac{1}{12}(16x^2+42x-5)$

Solution is given in hard book.

112. Select the quadratic polynomial $p(x)$ with 3 and $-\frac{2}{5}$ as sum and product of its zeroes, respectively.
(a) $x^2-3x-\frac{2}{5}$
(b) x^2-3x-2
(c) $5x^2-15x-2$
(d) $15x^2-5x+\frac{2}{5}$

Sol : www.cbse.site/ma/bm212

113. If m and n are the zeroes of the polynomial $3x^2+11x-4$, then value of $\frac{m}{n}+\frac{n}{m}$ will be
(a) $\frac{12}{145}$
(b) $-\frac{12}{145}$
(c) $-\frac{145}{12}$
(d) $\frac{145}{12}$

Solution is given in hard book.

114. If -1 is a zero of the polynomial $p(x)=kx^2-4x+k$, the value of k is
(a) –4

(b) –2
(c) 2
(d) 4

Solution is given in hard book.

115. If α and β are the zeroes of a polynomial $x^2 - 4\sqrt{3}\,x + 3$, then the value of $\alpha + \beta - \alpha\beta$ will be
(a) $\sqrt{3}(2 - \sqrt{3})$
(b) $\sqrt{3}(2 + \sqrt{3})$
(c) $\sqrt{3}(4 + \sqrt{3})$
(d) $\sqrt{3}(4 - \sqrt{3})$

Solution is given in hard book.

116. If a and b are the zeroes of polynomial $x^2 + ax + b$, the values of a and b are
(a) 1 and 2
(b) 1 and –2
(c) –2 and 1
(d) 2 and 1

Solution is given in hard book.

117. The zeroes of the quadratic polynomial $x^2 - 2\sqrt{2}\,x$ are
(a) 1 and $2\sqrt{2}$
(b) 0 and $2\sqrt{2}$
(c) 0 and 1
(d) 1 and 2

Solution is given in hard book.

118. The zeroes of the quadratic polynomial $5x^2 + 8x - 4$ are
(a) –2 and $\frac{2}{5}$
(b) –3 and $\frac{5}{2}$
(c) $-\frac{3}{2}$ and $\frac{1}{2}$
(d) $\frac{1}{2}$ and $\frac{3}{2}$

Solution is given in hard book.

119. If α and β are the zeroes the polynomial $2x^2 - 4x + 5$, the value of $\alpha^2 + \beta^2$ is
(a) 2
(b) 1
(c) -1
(d) -6

Solution is given in hard book.

120. If one zero of the polynomial $2x^2 + 3x + \lambda$ is $\frac{1}{2}$, what is the value of λ and the other zero?
(a) –2 and –2
(b) –3 and –3
(c) –2 and –3
(d) –3 and –2

Solution is given in hard book.

121. If α and β are zeroes of the polynomial $f(x) = x^2 - x - k$, such that $\alpha - \beta = 9$, the value of k will be
(a) 20
(b) 30
(c) 60
(d) 18

Solution is given in hard book.

122. If α,β and γ are zeroes of the polynomial $6x^3 + 3x^2 - 5x + 1$, then value of $\alpha^{-1} + \beta^{-1} + \gamma^{-1}$ will be
(a) 5
(b) 4
(c) 3
(d) 2

Solution is given in hard book.

123. When $p(x) = x^2 + 7x + 9$ is divisible by $g(x)$, we get $(x + 2)$ and -1 as the quotient and remainder respectively. The polynomial $g(x)$ will be
(a) $x + 2$
(b) $x - 1$
(c) $x + 6$
(d) $x + 5$

Solution is given in hard book.

124. Select the value for k for which $x^4+10x^3+25x^2+15x+k$ is exactly divisible by $x+7$.
(a) –102
(b) –91
(c) –103
(d) –104

Solution is given in hard book.

125. On dividing the polynomial $4x^4-5x^3-39x^2-46x-2$ by the polynomial $g(x)$, the quotient is x^2-3x-5 and the remainder is $-5x+8$. The polynomial $g(x)$ will be
(a) $2x^2+7x+1$
(b) $2x^2-7x+2$
(c) $4x^2+7x+2$
(d) $2x^2+7x+1$

Solution is given in hard book.

126. If the squared difference of the zeroes of the quadratic polynomial $f(x)=x^2+px+45$ is equal to 144, the value of p will be
(a) 21
(b) 18
(c) –21
(d) –31

Solution is given in hard book.

127. If the zeroes of the polynomial x^2+px+q are double in value to the zeroes of $2x^2-5x-3$, the value of p and q will be
(a) –2 and –3
(b) –6 and –5
(c) –5 and –6
(d) –3 and –2

Solution is given in hard book.

128. If α and β are zeroes of $x^2-(k-6)x+2(2k-1)$, such that $\alpha+\beta=\frac{1}{2}\alpha\beta$, value of k will be
(a) –2
(b) 0
(c) 3
(d) –5

Solution is given in hard book.

Direction For Question : (21-22)
Polynomial $x^4+7x^3+7x^2+px+q$ is exactly divisible by $x^2+7x+12$.

129. The value of p will be
(a) -35
(b) -25
(c) -15
(d) -60

Solution is given in hard book.

130. The value of q will be
(a) -35
(b) -25
(c) -15
(d) -60

Solution is given in hard book.

131. If α and β are the zeroes of the polynomial $p(x)=2x^2+5x+k$ satisfying the relation, $\alpha^2+\beta^2+\alpha\beta=\frac{21}{4}$, then find the value of k.
(a) 4
(b) 3
(c) 2
(d) 1

Solution is given in hard book.

Direction For Question : (132-133)
Let α and β are the zeroes of polynomial $p(x)=3x^2+2x+1$. Let α_1 and β_1 are zeroes of new polynomial $q(x)$ where $\alpha_1=\frac{1-\alpha}{1+\alpha}$ and $\beta_1=\frac{1-\beta}{1+\beta}$.

132. Which of the following is the value of $\alpha_1+\beta_1$?
(a) 1
(b) 2
(c) 3
(d) 4

Solution is given in hard book.

133. Which of the following is the value of $\alpha_1\beta_1$?
(a) 1
(b) 2
(c) 3
(d) 4

Solution is given in hard book.

134. Which of the following is the polynomial $q(x)$?
(a) x^2+3x-2
(b) x^2-3x+2
(c) x^2-2x+3
(d) x^2+2x-3

Solution is given in hard book.

Direction For Question : (135-136)
Let α and β are the zeroes of polynomial x^2+4x+3 , Let α_1 and β_1 are zeroes of new polynomial $q(x)$ where $\alpha_1=1+\frac{\beta}{\alpha}$ and $\beta_1=1+\frac{\alpha}{\beta}$.

135. Which of the following is the value of $\alpha_1+\beta_1$?
(a) $\frac{16}{3}$
(b) $\frac{16}{5}$
(c) $\frac{14}{3}$
(d) $\frac{14}{5}$

Solution is given in hard book.

136. Which of the following is the value of $\alpha_1\beta_1$?
(a) $\frac{16}{3}$
(b) $\frac{16}{5}$
(c) $\frac{14}{3}$
(d) $\frac{14}{5}$

Solution is given in hard book.

137. Which of the following is the polynomial $q(x)$?
(a) $\frac{5}{3}x^2-\frac{16}{5}x+\frac{16}{5}$
(b) $3x^2-\frac{16}{3}x+\frac{16}{3}$
(c) $\frac{1}{3}(3x^2-16x+16)$
(d) $\frac{1}{5}(3x^2-16x+16)$

Solution is given in hard book.

138. If α and β are zeroes of the polynomial $p(x)=6x^2-5x+k$ such that $\alpha-\beta=\frac{1}{6}$, The value of k will be
(a) 1
(b) 2
(c) 3
(d) 4

Solution is given in hard book.

Direction For Question : (31-32)
Let β and $\frac{1}{\beta}$ are zeroes of the polynomial $(a^2+a)x^2+61x+6a$.

139. The value of a will be
(a) 2
(b) 4
(c) 5
(d) 7

Solution is given in hard book.

140. The value of β will be
(a) $\frac{6}{5}$
(b) $-\frac{5}{6}$
(c) 5
(d) 7

Solution is given in hard book.

141. If α and β are the zeroes of the polynomial $f(x)=x^2-6x+k$, such that $\alpha^2+\beta^2=40$. The value of k will be
(a) 0

(b) –4
(c) –2
(d) –3

Solution is given in hard book.

142. If one of the zeroes of the quadratic polynomial $f(x) = 14x^2 - 42k^2x - 9$ is negative of the other, the value of k is
(a) 0
(b) 1
(c) 2
(d) 3

Solution is given in hard book.

143. If the sum and product of the zeroes of the polynomial $ax^2 - 5x + c$ are equal to 10 each, the values of a and c are
(a) 6 and $\frac{3}{2}$
(b) $\frac{3}{2}$ and 6
(c) $\frac{1}{2}$ and 5
(d) 5 and $\frac{1}{2}$

Solution is given in hard book.

144. If one the zero of a polynomial $3x^2 - 8x + 2k + 1$ is seven times the other, the value of k will be
(a) $\frac{1}{3}$
(b) $\frac{2}{3}$
(c) $\frac{3}{2}$
(d) 0

Solution is given in hard book.

145. If α and β are the zeroes the polynomial $2x^2 - 4x + 5$, the value of $\frac{1}{\alpha} + \frac{1}{\beta}$ is
(a) $\frac{4}{25}$
(b) $-\frac{4}{25}$
(c) $\frac{4}{5}$
(d) $-\frac{4}{5}$

Solution is given in hard book.

146. Quadratic polynomial $2x^2 - 3x + 1$ has zeroes as α and β. Which of the following is the quadratic polynomial whose zeroes are 3α and 3β ?
(a) $2x + 9x - 9$
(b) $2x - 9x + 9$
(c) $x^2 - \frac{9}{2}x + \frac{9}{2}$
(d) $x^2 - 9x + 9$

Solution is given in hard book.

147. If α and β are the zeroes of the polynomial $6y^2 - 7y + 2$, Select the quadratic polynomial whose zeroes are $\frac{1}{\alpha}$ and $\frac{1}{\beta}$.
(a) $y^2 + 7y + 6$
(b) $y^2 + 7y - 6$
(c) $y^2 - 7y + 6$
(d) $y^2 - 3.5y + 3$

Solution is given in hard book.

148. The zeroes of the polynomial $4x^2 + 4x - 3$ is/are
(a) $\frac{1}{2}$
(b) $\frac{-3}{2}$
(c) both
(d) none

Solution is given in hard book.

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CHAPTER 3

PAIR OF LINEAR EQUATION IN TWO VARIABLES

1. The value of k for which the system of linear equations $x+2y=3$, $5x+ky+7=0$ is inconsistent is

(a) $-\frac{14}{3}$

(b) $\frac{2}{5}$

(c) 5

(d) 10

Sol : www.cbse.site/ma/cm101

2. The value of k for which the system of equations $x+y-4=0$ and $2x+ky=3$, has no solution, is

(a) -2

(b) $\neq 2$

(c) 3

(d) 2

Sol : www.cbse.site/ma/cm102

3. For which value(s) of p, will the lines represented by the following pair of linear equations be parallel

$$3x-y-5=0$$

$$6x-2y-p=0$$

(a) all real values except 10

(b) 10

(c) 5/2

(d) 1/2

Sol : www.cbse.site/ma/cm103

4. The 2 digit number which becomes $\frac{5}{6}$th of itself when its digits are reversed. The difference in the digits of the number being 1, then the two digits number is

(a) 45

(b) 54

(c) 36

(d) None of these

Sol : www.cbse.site/ma/cm104

5. In a number of two digits, unit's digit is twice the tens digit. If 36 be added to the number, the digits are reversed. The number is

(a) 36

(b) 63

(c) 48

(d) 84

Sol : www.cbse.site/ma/cm105

6. If $3x+4y:x+2y=9:4$, then $3x+5y:3x-y$ is equal to

(a) 4 : 1

(b) 1 : 4

(c) 7 : 1

(d) 1 : 7

Sol : www.cbse.site/ma/cm106

7. A fraction becomes 4 when 1 is added to both the numerator and denominator and it becomes 7 when 1 is subtracted from both the numerator and denominator. The numerator of the given fraction is

(a) 2

(b) 3

(c) 5

(d) 15

Sol : www.cbse.site/ma/cm107

8. x and y are 2 different digits. If the sum of the two digit numbers formed by using both the digits is a perfect square, then value of $x+y$ is

(a) 10

(b) 11

(c) 12

(d) 13

Sol : www.cbse.site/ma/cm108

9. The pair of equations $3^{x+y}=81,\ 81^{x-y}=3$ has
(a) no solution
(b) unique solution
(c) infinitely many solutions
(d) $x=2\frac{1}{8}, y=1\frac{7}{8}$

Sol : www.cbse.site/ma/cm109

10. The pair of linear equations $2kx+5y=7,\ 6x-5y=11$ has a unique solution, if
(a) $k\neq -3$
(b) $k\neq \frac{2}{3}$
(c) $k\neq 5$
(d) $k\neq \frac{2}{9}$

Sol : www.cbse.site/ma/cm110

11. The pair of equations $x+2y+5=0$ and $-3x-6y+1=0$ has
(a) a unique solution
(b) exactly two solutions
(c) infinitely many solutions
(d) no solution

Sol : www.cbse.site/ma/cm111

12. If a pair of linear equations is consistent, then the lines will be
(a) parallel
(b) always coincident
(c) intersecting or coincident
(d) always intersecting

Sol : www.cbse.site/ma/cm112

13. The pair of equations $y=0$ and $y=-7$ has
(a) one solution
(b) two solutions
(c) infinitely many solutions
(d) no solution

Sol : www.cbse.site/ma/cm113

14. The pair of equations $x=a$ and $y=b$ graphically represents lines which are
(a) parallel
(b) intersecting at (b, a)
(c) coincident
(d) intersecting at (a, b)

Sol : www.cbse.site/ma/cm114

15. For what value of k, do the equations $3x-y+8=0$ and $6x-ky=-16$ represent coincident lines ?
(a) $\frac{1}{2}$
(b) $-\frac{1}{2}$
(c) 2
(d) -2

Sol : www.cbse.site/ma/cm115

16. If the lines given by $3x+2ky=2$ and $2x+5y+1=0$ are parallel, then the value of k is
(a) $-\frac{5}{4}$
(b) $\frac{2}{5}$
(c) $\frac{15}{4}$
(d) $\frac{3}{2}$

Sol : www.cbse.site/ma/cm116

17. The value of c for which the pair of equations $cx-y=2$ and $6x-2y=3$ will have is
(a) 3
(b) -3
(c) -12
(d) no value

Sol : www.cbse.site/ma/cm117

18. One equation of a pair of dependent linear equations $-5x+7y=2$ The second equation can be
(a) $10x+14y+4=0$
(b) $-10x-14y+4=0$
(c) $-10x+14y+4=0$
(d) $10x-14y=-4$

Sol : www.cbse.site/ma/cm118

19. If $x=a$ and $y=b$ is the solution of the equations $x-y=2$ and $x+y=4$, then the values of a and b

are, respectively

(a) 3 and 5

(b) 5 and 3

(c) 3 and 1

(d) -1 and -3

Sol : www.cbse.site/ma/cm119

20. Aruna has only ₹ 1 and ₹ 2 coins with her. If the total number of coins that she has is 50 and the amount of money with her is ₹ 75, then the number of ₹ 1 and ₹ 2 coins are, respectively

(a) 35 and 15

(b) 35 and 20

(c) 15 and 35

(d) 25 and 25

Sol : www.cbse.site/ma/cm120

21. The father's age is six times his son's age. Four years hence, the age of the father will be four times his son's age. The present ages (in year) of the son and the father are, respectively.

(a) 4 and 24

(b) 5 and 30

(c) 6 and 36

(d) 3 and 24

Sol : www.cbse.site/ma/cm121

22. **Assertion :** Pair of linear equations : $9x+3y+12=0$, $8x+6y+24=0$ have infinitely many solutions.

Reason : Pair of linear equations $a_1x+b_1y+c_1=0$ and $a_2x+b_2y+c_2=0$ have infinitely many solutions, if $\frac{a_1}{a_2}=\frac{b_1}{b_2}=\frac{c_1}{c_2}$

(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

(c) Assertion (A) is true but reason (R) is false.

(d) Assertion (A) is false but reason (R) is true.

Sol : www.cbse.site/ma/cm122

23. **Assertion :** $x+y-4=0$ and $2x+ky-3=0$ has no solution if $k=2$.

Reason : $a_1x+b_1y+c_1=0$ and $a_2x+b_2y+c_2=0$ are consistent if $\frac{a_1}{a_2}\neq\frac{k_1}{k_2}$.

(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

(c) Assertion (A) is true but reason (R) is false.

(d) Assertion (A) is false but reason (R) is true.

Sol : www.cbse.site/ma/cm123

24. If the equations $kx-2y=3$ and $3x+y=5$ represent two intersecting lines at unique point, then the value of k is ..... .

(a) $k=-6$

(b) $k\neq-6$

(c) $k=4$

(d) $k\neq4$

Sol : www.cbse.site/ma/cm124

25. What do you say about the solution of the pair of linear equations $y=0$ and $y=-5$?

(a) no solution

(b) unique solution

(c) infinitely solution

(d) can't say anything

Sol : www.cbse.site/ma/cm125

26. If $am=bl$, then what do you say about the solution of the pair of linear equations $ax+by=c$ and $lx+my=n$?

(a) no solution

(b) unique solution

(c) infinitely solution

(d) can't say anything

Sol : www.cbse.site/ma/cm126

27. If $ad\neq bc$, then what do you say about the solution of the pair of linear equations $ax+by=p$ and $cx+dy=q$?

(a) no solution

(b) unique solution
(c) infinitely solution
(d) can't say anything

Sol : www.cbse.site/ma/cm127

28. Two lines are given to be parallel. The equation of one of the lines is $4x+3y=14$, then the equation of the second line will be
(a) $12x+9x=42$
(b) $12x+9y=5$
(c) $12x+9y=15$
(d) $12x+9y=32$

Sol : www.cbse.site/ma/cm128

29. Which of the following value of k should be selected so that the pair of equations $x+2y=5$ and $3x+ky+15=0$ has a unique solution ?
(a) $k \neq 5$
(b) $k \neq 6$
(c) $k=5$
(d) $k=6$

Sol : www.cbse.site/ma/cm129

30. If $2x+y=23$ and $4x-y=19$, the value of $(5y-2x)$ and $(\frac{y}{x}-2)$ will be
(a) $-\frac{5}{7}$ and 31
(b) 31 and $-\frac{5}{7}$
(c) 37 and $\frac{2}{7}$
(d) $\frac{2}{7}$ and 37

Sol : www.cbse.site/ma/cm130

31. What do you say about the lines represented by $2x+y=3$ and $4x+2y=6$?
(a) lines are parallel
(b) lines are coincident
(c) lines are intersecting
(d) can't say anything

Sol : www.cbse.site/ma/cm131

32. What do you say about the following pair of linear equation ?
$3x+2y=8,\ \ 6x-4y=9$
(a) Lines are parallel
(b) pair of linear equation is consistent
(c) pair of linear equation is inconsistent
(d) Lines are coincident

Sol : www.cbse.site/ma/cm132

33. What do you say about the lines represented by ?
$2x+3y-9=0$ and $4x+6y-18=0$
(a) lines are parallel
(b) lines are coincident
(c) lines are intersecting
(d) can't say anything

Sol : www.cbse.site/ma/cm133

34. Given the linear equation $3x+4y=9$. Select another linear equation in these two variables such that the geometrical representation of the pair so formed is intersecting lines.
(a) $3x-5y=10$
(b) $6x+8y=18$
(c) $8x+12y=18$
(d) above all

Sol : www.cbse.site/ma/cm134

35. For what value of p does the pair of linear equations given below has unique solution ?
$4x+py+8=0$ and $2x+2y+2=0$.
(a) $p=1$
(b) $p=2$
(c) $p \neq 4$
(d) $p \neq 2$

Sol : www.cbse.site/ma/cm135

36. For what value of k, the pair of linear equations $kx-4y=3,\ 6x-12y=9$ has an infinite number of solutions ?
(a) $k=2$
(b) $k \neq 2$
(c) $k \neq 3$
(d) $k=4$

Sol : www.cbse.site/ma/cm136

37. For what value of k, the system of equations $kx+3y=1$, $12x+ky=2$ has no solution.

(a) $k=-6$

(b) $k\neq -6$

(c) $k=4$

(d) $k=-4$

Sol : www.cbse.site/ma/cm137

38. What are the values of x and y for the following pair of linear equations ?

$$3x+2y-7=0$$

$$4x+y-6=0$$

(a) 1 and 2

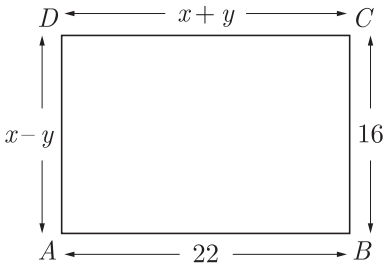
(b) 2 and 2

(c) 1 and 1

(d) –1 and –1

Sol : www.cbse.site/ma/cm138

39. In the figure given below, $ABCD$ is a rectangle. The values of x and y will be



(a) 3 and 19

(b) 19 and 3

(c) 4 and 18

(d) 18 and 4

Sol : www.cbse.site/ma/cm139

40. What are the values of x and y for the following pair of linear equations ?

$99x+101y=499$ and $101x+99y=501$

(a) 3 and 6

(b) 3 and 2

(c) 2 and 3

(d) 6 and 3

Sol : www.cbse.site/ma/cm140

41. What are the values of x and y for the following system of linear equations ?

$$2x-y=2$$

$$x+3y=15$$

(a) 4 and 5

(b) 3 and 4

(c) 5 and 4

(d) 4 and 4

Sol : www.cbse.site/ma/cm141

42. Select the value of k for which the pair of Linear equations $kx+y=d^2$ and $x+ky=1$ have infinitely many solutions.

(a) 1

(b) 2

(c) 3

(d) 4

Sol : www.cbse.site/ma/cm142

43. What are the values of x and y for the following system of equations.

$\frac{21}{x}+\frac{47}{y}=110$, $\frac{47}{x}+\frac{21}{y}=162$, $x,\ y\neq 0$

(a) $\frac{1}{3}$ and $\frac{1}{2}$

(b) $\frac{1}{3}$ and 1

(c) $\frac{1}{2}$ and $\frac{1}{3}$

(d) $\frac{1}{2}$ and 1

Sol : www.cbse.site/ma/cm143

44. A fraction becomes $\frac{1}{3}$ when 2 is subtracted from the numerator and it becomes $\frac{1}{2}$ when 1 is subtracted from the denominator. The fraction will be

(a) $\frac{7}{15}$

(b) $\frac{8}{15}$

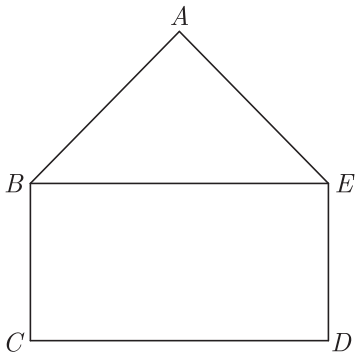
(c) $\frac{6}{15}$

(d) $\frac{9}{15}$

Sol : www.cbse.site/ma/cm144

45. In the figure, $ABCDE$ is a pentagon with $BE \parallel CD$ and $BC \parallel DE$. BC is perpendicular to CD. $AB=5$ cm, $AE=5$ cm, $BE=7$ cm, $BC=x-y$ and $CD=x+y$. If the perimeter of $ABCDE$ is 27

cm. The value of x and y, will be



(a) 3 and 2
(b) 2 and 3
(c) 1 and 6
(d) 6 and 1

Sol : www.cbse.site/ma/cm145

46. Half the perimeter of a rectangular garden, whose length is 4 m more then its width, is 36 m. The dimensions of garden will be
(a) 20 m by 16 m
(b) 36 m by 10 m
(c) 16 m by 30 m
(d) 20 m by 16 m

Sol : www.cbse.site/ma/cm146

47. For what value of p will the following system of equations have no solution ?
$(2p-1)x+(p-1)y = 2p+1;\ y+3x-1=0$
(a) $p=2$
(b) $p \neq 2$
(c) $p=4$
(d) $p \neq 4$

Sol : www.cbse.site/ma/cm147

48. For what value of k the following pair of equations has no solution :
$x+2y=3,\ (k-1)x+(k+1)y=(k+2).$
(a) $k=3$
(b) $k \neq 3$
(c) $k=4$
(d) $k \neq 4$

Sol : www.cbse.site/ma/cm148

49. Sum of the ages of a father and the son is 40 years. If father's age is three times that of his son, then what is father age ?
(a) 22 years
(b) 28 years
(c) 30 years
(d) 24 years

Sol : www.cbse.site/ma/cm149

50. What are the values of x and y for the following system of equation ?

$$\frac{x}{2}+\frac{2y}{3} = -1$$

$$x-\frac{y}{3} = 3$$

(a) –3 and 2
(b) 2 and –3
(c) 1 and 4
(d) 4 and 1

Sol : www.cbse.site/ma/cm150

51. What are the values of x and y for the following system of equation ?

$$8x+5y = 9$$

$$3x+2y = 4$$

(a) 2 and –5
(b) –5 and 2
(c) –2 and 5
(d) 5 and –2

Sol : www.cbse.site/ma/cm151

Direction For Question : (*52-53*)

2 man and 7 boys can do a piece of work in 4 days. It is done by 4 men and 4 boys in 3 days. How long would it take for one man or one boy to do it ?

52. How long would it take for one boy to do it ?
(a) 45 days
(b) 60 days
(c) 15 days
(d) 25 days

Sol : www.cbse.site/ma/cm152

53. How long would it take for one man to do it ?

(a) 13 days

(b) 14 days

(c) 16 days

(d) 15 days

Sol : www.cbse.site/ma/cm152

54. In an election contested between A and B, A obtained votes equal to twice the no. of persons on the electoral roll who did not cast their votes and this later number was equal to twice his majority over B. If there were 1,8000 persons on the electoral roll. How many votes for B.

(a) 2000

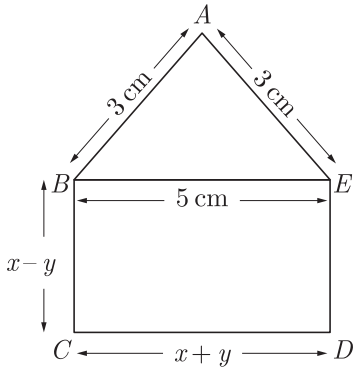
(b) 8000

(c) 6000

(d) 1000

Sol : www.cbse.site/ma/cm153

55. In the figure below $ABCDE$ is a pentagon with $BE \| CD$ and $BC \| DE$. BC is perpendicular to DC. If the perimeter of $ABCDE$ is 21 cm, what is the value of x ?



(a) 5

(b) 0

(c) 3

(d) 2

Sol : www.cbse.site/ma/cm154

Direction For Question : (56-57)

Solve the following pair of equations for x and y :

$$ax + by = \frac{a+b}{2}$$
$$3x + 5y = 4$$

56. What is the value of x?

(a) $\frac{1}{2}$

(b) $\frac{1}{3}$

(c) $\frac{1}{4}$

(d) $\frac{1}{5}$

Sol : www.cbse.site/ma/cm155

57. What is the value of y?

(a) $\frac{1}{2}$

(b) $\frac{1}{3}$

(c) $\frac{2}{3}$

(d) $\frac{1}{4}$

Sol : www.cbse.site/ma/cm155

Direction For Question : (58-60)

Solve the following pair of equations for x and y :

$4x + \frac{6}{y} = 15, 6x - \frac{8}{y} = 14$

and also find the value of p such that $y = px - 2$.

58. What is the value of x?

(a) 3

(b) 4

(c) 5

(d) 6

Sol : www.cbse.site/ma/cm156

59. What is the value of y?

(a) 1

(b) 2

(c) 3

(d) 4

Sol : www.cbse.site/ma/cm156

60. What is the value of p such that $y = px - 2$?

(a) $\frac{4}{3}$

(b) $\frac{2}{3}$

(c) $\frac{1}{3}$

(d) $\frac{1}{4}$

Sol : www.cbse.site/ma/cm156

61. A chemist has one solution which is 50 % acid and a second which is 25 % acid. How much of each should be mixed to make 10 litre of 40 % acid solution.
(a) 6 litre of 50 % acid and 4 litre of 25 % acid
(b) 4 litre of 50 % acid and 6 litre of 25 % acid
(c) 3 litre of 50 % acid and 2 litre of 25 % acid
(d) 2 litre of 50 % acid and 3 litre of 25 % acid

Sol : www.cbse.site/ma/cm157

Direction For Question : (62-63)

A man can row a boat downstream 20 km in 2 hours and upstream 4 km in 2 hours.

62. What is his speed of rowing in still water ?
(a) 2 km/hr
(b) 3 km/hr
(c) 6 km/hr
(d) 8 km/hr

Sol : www.cbse.site/ma/cm158

63. What is the speed of the stream ?
(a) 1 km/hr
(b) 3 km/hr
(c) 4 km/hr
(d) 0.5 km/hr

Sol : www.cbse.site/ma/cm158

Direction For Question : (64-65)

It can take 12 hours to fill a swimming pool using two pipes. If the pipe of larger diameter is used for four hours and the pipe of smaller diameter for 9 hours, only half of the pool can be filled.

64. How long would it take for larger pipe to fill the pool separately?
(a) 10 hours
(b) 20 hours
(c) 30 hours
(d) 35 hours

Sol : www.cbse.site/ma/cm159

65. How long would it take for smaller pipe to fill the pool separately?
(a) 10 hours
(b) 20 hours
(c) 30 hours
(d) 35 hours

Sol : www.cbse.site/ma/cm159

Direction For Question : (66-67)

The total cost of a certain length of a piece of cloth is ₹200. If the piece was 5 m longer and each metre of cloth costs ₹2 less, the cost of the piece would have remained unchanged.

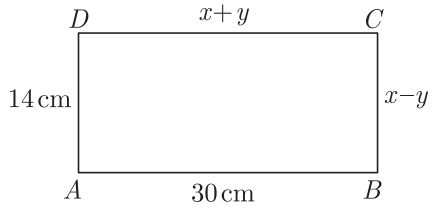
66. How long is the piece ?
(a) 18 m
(b) 20 m
(c) 22 m
(d) 15 m

Sol : www.cbse.site/ma/cm160

67. What is its original rate per metre ?
(a) ₹12
(b) ₹15
(c) ₹10
(d) ₹16

Sol : www.cbse.site/ma/cm160

68. In Figure, $ABCD$ is a rectangle. The values of x and y will be



(a) 20 cm
(b) 24 cm
(c) 22 cm
(d) 18 cm

Sol : www.cbse.site/ma/cm161

69. 4 chairs and 3 tables cost Rs 2100 and 5 chairs and 2 tables cost Rs 1750. What is the cost of one chair and one table separately?
(a) Rs 150 and Rs 500
(b) Rs 500 and Rs 150
(c) Rs 250 and Rs 400
(d) Rs 400 and Rs 250

Sol : www.cbse.site/ma/cm162

Direction For Question : (70-71)
Solve the following pair of equations :
$3x-5y-4=0$ and $9x=2y+7$

70. What is the value of y
(a) $-\frac{2}{13}$
(b) $-\frac{5}{13}$
(c) $\frac{2}{13}$
(d) $\frac{9}{13}$

Sol : www.cbse.site/ma/cm163

71. What is the value of x
(a) $-\frac{2}{13}$
(b) $-\frac{5}{13}$
(c) $\frac{2}{13}$
(d) $\frac{9}{13}$

Sol : www.cbse.site/ma/cm163

Direction For Question : (72-73)
A train covered a certain distance at a uniform speed. If the train would have been 10 km/hr scheduled time. And, if the train were slower by 10 km/hr, it would have taken 3 hr more than the scheduled time.

72. What is the actual speed of train?
(a) 50 kmph
(b) 60 kmph
(c) 40 kmph
(d) 30 kmph

Sol : www.cbse.site/ma/cm164

73. What is the distance covered by the train?
(a) 200 km
(b) 600 km
(c) 400 km
(d) 300 km

Sol : www.cbse.site/ma/cm164

Direction For Question : (74-75)
The ratio of incomes of Ram and Shyam is 11:7 and the ratio of their expenditures is 9:5. Each of them manages to save ₹ 400 per month.

74. What is monthly incomes of Ram?
(a) ₹ 2200
(b) ₹ 1400
(c) ₹ 1100
(d) ₹ 700

Sol : www.cbse.site/ma/cm165

75. What is monthly income of Shyam?
(a) ₹ 2200
(b) ₹ 1400
(c) ₹ 1100
(d) ₹ 700

Sol : www.cbse.site/ma/cm165

Direction For Question : (76-77)
Two point A and B are 150 km apart on a highway. Two cars start from A and B at the same time. If they move in the same direction they meet in 15 hours. But if they move in the opposite direction, they meet in 1 hours.

76. Speed of the car starting form A is
(a) 50 kmph
(b) 60 kmph
(c) 40 kmph
(d) 80 kmph

Sol : www.cbse.site/ma/cm166

77. Speed of the car starting form B is
(a) 50 kmph
(b) 30 kmph
(c) 90 kmph

(d) 70 kmph

Sol : www.cbse.site/ma/cm166

78. If 2 is subtracted from the numerator and 1 is added to the denominator, a fraction becomes $\frac{1}{2}$, but when 4 is added to the numerator and 3 is subtracted from the denominator, it becomes $\frac{3}{2}$. The fraction will be

(a) $\frac{2}{11}$

(b) $\frac{7}{111}$

(c) $\frac{8}{11}$

(d) $\frac{5}{11}$

Sol : www.cbse.site/ma/cm167

Direction For Question : (79-80)

If a bag containing red and white balls, half the number of white balls is equal to one-third the number of red balls. Thrice the total number of balls exceeds seven times the number of white balls by 6.

79. How many balls of white colour does the bag contain ?

(a) 10

(b) 12

(c) 14

(d) 18

Sol : www.cbse.site/ma/cm168

80. How many balls of red colour does the bag contain ?

(a) 10

(b) 12

(c) 14

(d) 18

Sol : www.cbse.site/ma/cm168

81. A two digit number is obtained by either multiplying the sum of digits by 8 and then subtracting 5 or by multiplying the difference of digits by 16 and adding 3. The number will be

(a) 83

(b) 98

(c) 77

(d) 53

Sol : www.cbse.site/ma/cm169

82. The area of a rectangle gets reduced by 9 square units, if its length is reduced by 5 units and the breadth is increased by 3 units. The area is increased by 67 square units if length is increased by 3 units and breadth is increased by 2 units. The perimeter of the rectangle will be

(a) 52 units

(b) 58 units

(c) 46 units

(d) 48 units

Sol : www.cbse.site/ma/cm170

Direction For Question : (83-84)

Solve the following pair of equations :

$2(3x-y)=5xy, 2(x+3y)=5xy.$

83. What is the value of x ?

(a) 1

(b) 2

(c) 3

(d) 4

Sol : www.cbse.site/ma/cm171

84. What is the value of y ?

(a) 1

(b) 2

(c) 3

(d) 4

Sol : www.cbse.site/ma/cm171

85. The students of a class are made to stand in rows. If 3 students are extra in a row, there would be 1 row less. If 3 students are less in a row, there would be 2 rows more. The number of students in the class will be

(a) 24

(b) 36

(c) 32

(d) 28

Sol : www.cbse.site/ma/cm172

Direction For Question : (86-87)

The ages of two friends Ani and Biju differ by 3 years. Ani's father Dharam is twice as old as ani and Biju is twice as old as his sister Cathy. The ages of Cathy and Dharam differ by 30 year. Find the ages of Ani and Biju.

86. The age of Ani is
(a) 16 year
(b) 19 year
(c) 20 years
(d) 24 years

Sol : www.cbse.site/ma/cm173

87. The age of Biju is
(a) 16 year
(b) 19 year
(c) 20 years
(d) 24 years

Sol : www.cbse.site/ma/cm173

88. One says, "Give me a hundred, friend! I shall then become twice as rich as you." The other replies, "If you give me ten, I shall be six times as rich as you." What is the amount of their (respective) capital ?
(a) Rs 80 and Rs 190
(b) Rs 20 and Rs 160
(c) Rs 40 and Rs 170
(d) Rs 100 and Rs 200

Sol : www.cbse.site/ma/cm174

89. A fraction become $\frac{9}{11}$ if 2 is added to both numerator and denominator. If 3 is added to both numerator and denominator it becomes $\frac{5}{6}$. The fraction will be
(a) $\frac{5}{11}$
(b) $\frac{5}{9}$
(c) $\frac{7}{9}$
(d) $\frac{6}{11}$

Sol : www.cbse.site/ma/cm175

Direction For Question : (90-91)

A motor boat can travel 30 km upstream and 28 km downstream in 7 hours. It can travel 21 km upstream and return in 5 hours.

90. The speed of the boat in still water will be
(a) 10 km/hr
(b) 4 km/hr
(c) 12 km/hr
(d) 16 km/hr

Sol : www.cbse.site/ma/cm176

91. The speed of the stream will be
(a) 10 km/hr
(b) 4 km/hr
(c) 12 km/hr
(d) 16 km/hr

Sol : www.cbse.site/ma/cm176

Direction For Question : (92-93)

A boat covers 32 km upstream and 36 km downstream in 7 hours. Also, it covers 40 km upstream and 48 km downstream in 9 hours.

92. The speed of the boat in still water will be
(a) 10 km/hr
(b) 8 km/hr
(c) 12 km/hr
(d) 16 km/hr

Sol : www.cbse.site/ma/cm177

93. The speed of the stream will be
(a) 2 km/hr
(b) 4 km/hr
(c) 3 km/hr
(d) 1 km/hr

Sol : www.cbse.site/ma/cm177

Direction For Question : (94-95)

For what values of a and b does the following pair of linear equations have infinite number of solution ?

$2x+3y=7, a(x+y)-b(x-y)=3a+b-2$

94. The value of a will be
(a) 3

(b) 4
(c) 5
(d) 6

Sol : www.cbse.site/ma/cm178

95. The value of b will be
(a) 1
(b) 3
(c) 2
(d) 4

Sol : www.cbse.site/ma/cm178

Direction For Question : (96-97)

At a certain time in a deer, the number of heads and the number of legs of deer and human visitors were counted and it was found that there were 39 heads and 132 legs.

96. What is the number of deer visitors in the park ?
(a) 12
(b) 27
(c) 16
(d) 38

Sol : www.cbse.site/ma/cm179

97. What is the number of human visitors in the park?
(a) 12
(b) 27
(c) 16
(d) 38

Sol : www.cbse.site/ma/cm179

98. The length of the sides of a triangle are $2x+\frac{y}{2}$, $\frac{5x}{3}+y+\frac{1}{2}$ and $\frac{2}{3}x+2y+\frac{5}{2}$. If the triangle is equilateral, its perimeter is
(a) 14.5 m
(b) 29 m
(c) 19.5 m
(d) 39 m

Sol : www.cbse.site/ma/cm180

99. When 6 boys were admitted and 6 girls left, the percentage of boys increased from 60% to 75%. What is the original no. of boys and girls in the class ?
(a) 24 and 16
(b) 16 and 24
(c) 12 and 16
(d) 16 and 12

Sol : www.cbse.site/ma/cm181

Direction For Question : (100-101)

A cyclist, after riding a certain distance, stopped for half an hour to repair his bicycle, after which he completes the whole journey of 30 km at half speed in 5 hours. If the breakdown had occurred 10 km farther off, he would have done the whole journey in 4 hours. Find where the breakdown occurred and his original speed.

100. What was the original speed ?
(a) 10 km
(b) 12 km
(c) 8 km
(d) 7 km

Sol : www.cbse.site/ma/cm182

101. Where the breakdown occurred ?
(a) at 10 km
(b) at 12 km
(c) at 8 km
(d) at 7 km

Sol : www.cbse.site/ma/cm182

Direction For Question : (102-103)

The population of a village is 5000. If in a year, the number of males were to increase by 5% and that of a female by 3% annually, the population would grow to 5202 at the end of the year. Find the number of males and females in the village.

102. The number of male in village is
(a) 2600
(b) 2400
(c) 2200
(d) 2800

Sol : www.cbse.site/ma/cm183

103. The number of female in village is
(a) 2600
(b) 2400
(c) 2200
(d) 2800

Sol : www.cbse.site/ma/cm183

COMPETENCEY BASED QUESTIONS

Direction For Question : (104-106)

Nitin and his sons run a lawn service, which includes mowing, edging, trimming, and aerating a lawn. His fixed cost includes insurance, his salary, and monthly payments on equipment, and amounts to Rs 4000 per month. The variable costs include gas, oil, hourly wages for his employees, and miscellaneous expenses, which run about Rs 75 per lawn. The average charge for full service lawn care is Rs 115 per visit.

104. How many lawns Nitin must service each month to break even ?
(a) 100
(b) 120
(c) 140
(d) 160

Sol : www.cbse.site/ma/cm184

105. What is the revenue required to break even.
(a) ₹ 23000
(b) ₹ 11500
(c) ₹ 9800
(d) ₹ 17690

Sol : www.cbse.site/ma/cm184

106. What is the revenue if they get 90 services ?
(a) ₹ 995
(b) ₹ 610
(c) ₹ 2030
(d) ₹ 1015

Sol : www.cbse.site/ma/cm184

Direction For Question : (107-108)

Due to high market demand, a manufacturer decides to introduce a new line of frying pan. By using existing factory space and retraining some employees, fixed costs are estimated at Rs 84000/mo. The components to assemble and test each frying pan are expected to run Rs 450 per unit. If market research shows consumers are willing to pay at least Rs 690 for this product, find

107. How many units must be made and sold each month to break even ?
(a) 1050
(b) 700
(c) 350
(d) 230

Sol : www.cbse.site/ma/cm185

108. What is the revenue required to break even.
(a) ₹ 198400
(b) ₹ 126800
(c) ₹ 321600

(d) ₹ 241500

Sol : www.cbse.site/ma/cm185

109. A play is a work of drama, usually consisting mostly of dialogue between characters and intended for theatrical performance rather than just reading. Comedies are plays which are designed to be humorous. Comedies are often filled with witty remarks, unusual characters, and strange circumstances. Certain comedies are geared toward different age groups.

At a recent production of a comedy drama, the Ravindra Rangmanch Theater brought in a total of Rs 304950 in revenue. If adult tickets were Rs 90 and children's tickets were Rs 65, how many tickets of each type were sold if 3800 tickets in all were sold?

(a) 1314 adult tickets and 1564 child tickets

(b) 1482 adult tickets and 2318 child tickets

(c) 2318 adult tickets and 1482 child tickets

(d) 1564 adult tickets and 1314 child tickets

Sol : www.cbse.site/ma/cm186

Direction For Question : (110-111)

Alumni can help college sustain through their donations and voluntary help. Alumni can also be helpful in providing valuable financial, intellectual and human resource. If a big chunk of money that institutes require comes from alumni, it will help those institutes remain competitive.

Alumni association of NIT Kuruskhstra donated Rs 100,000 to his alma mater. The college used the funds to make a loan to a science student at 7% interest and a loan to a engineering student at 6% interest. That year the college earned Rs 6350 in interest.

110. How much was loaned to engineering student?

(a) ₹ 75000

(b) ₹ 35000

(c) ₹ 85000

(d) ₹ 65000

Sol : www.cbse.site/ma/cm187

111. How much was loaned to science student?

(a) ₹ 75000

(b) ₹ 35000

(c) ₹ 85000

(d) ₹ 65000

Sol : www.cbse.site/ma/cm187

Direction For Question : (112-113)

A moving walkway, also known as an autowalk, is a slow-moving conveyor mechanism that transports people across a horizontal or inclined plane over a short to medium distance. Moving walkways can be used by standing or walking on them. They are often

installed in pairs, one for each direction.

As part of an algebra field trip, Jenish takes his class to the airport to use their moving walkways for a demonstration. The class measures the longest walkway, which turns out to be 256 ft long. Using a stop watch, Jenish shows it takes him just 32 sec to complete the walk going in the same direction as the walkway. Walking in a direction opposite the walkway, it takes him 320 sec (10 times as long!). The next day in class, Jenish hands out a two question quiz:

112. What is my (Jenish's) normal walking speed?
(a) 3.6 ft/sec
(b) 4.4 ft/sec
(c) 2.4 ft/sec
(d) 2.2 ft/sec

Sol : www.cbse.site/ma/cm188

113. What was the speed of the walkway in feet per second?
(a) 3.6 ft/sec
(b) 4.4 ft/sec
(c) 2.4 ft/sec
(d) 2.2 ft/sec

Sol : www.cbse.site/ma/cm188

114. Shalvi wants to use milk and orange juice to increase the amount of calcium and vitamin A in her daily diet. An ounce of milk contains 38 milligrams of calcium and 56 micrograms of vitamin A. An ounce of orange juice contains 5 milligrams of calcium and 60 micrograms of vitamin A. How many ounces of milk and orange juice should she drink each day to provide exactly 550 milligrams of calcium and 1,200 micrograms of vitamin A?

(a) 6.2 ounce of milk and 11.5 ounce of orange juices
(b) 11.5 ounce of milk and 6.2 ounce of orange juices
(c) 13.5 ounce of milk and 7.2 ounce of orange juices
(d) 7.2 ounce of milk and 13.5 ounce of orange juices

Sol : www.cbse.site/ma/cm189

115. Pathmeda village near Sanchore has Gopal Govardhan Gaushala, the largest Gaushala in India, spread over 200 acres. The gaushala takes care of more than 18,000 cattle.

Cows of Pathmeda gaushala in an experiment are to be kept on a strict diet. Each cow is to receive, among other things, 20 grams of protein and 6 grams of fat.

The laboratory technician is able to purchase two food mixes of the following compositions:

Mix A has 10% protein and 6% fat,

Mix B has 20% protein and 2% fat.

How many grams of each mix should be used to obtain the right diet for a single cow ?

(a) 80 grams Mix A and 60 grams Mix B

(b) 60 grams Mix A and 80 grams Mix B

(c) 70 grams Mix A and 50 grams Mix B

(d) 50 grams Mix A and 70 grams Mix B

Sol : www.cbse.site/ma/cm190

116. When you mix two or more substances with different levels of concentration, the final solution does not simply equate to the combined concentration levels of the original ingredients. It depends on the concentration of each solution.

Rahman works as a chemist in Biolab Pvt Ltd at Jaipur. He has two solutions of hydrochloric acid in stock: a 50% solution and an 80% solution. He want to make 100 milliliters of a 68% solution? How much of each should be used to obtain 100 milliliters of a 68% solution?

(a) 60 ml of 50% solution and 40 ml of 80% solution.

(b) 40 ml of 50% solution and 60 ml of 80% solution.

(c) 70 ml of 50% solution and 70 ml of 80% solution.

(d) 30 ml of 50% solution and 70 ml of 80% solution.

Sol : www.cbse.site/ma/cm191

117. A jeweller has two bars of gold alloy in stock, one of 12 carats and the other of 18 carats (24 carat gold is pure gold, 12 carat is $\frac{12}{24}$ pure, 18 carat gold is $\frac{18}{24}$ pure, and so on). How many grams of each alloy must be mixed to obtain 10 grams of 14 carat gold?

(a) $6\frac{2}{3}$ grams of 12 carat gold and $3\frac{1}{3}$ grams of 18 carat gold

(b) $3\frac{1}{3}$ grams of 12 carat gold and $6\frac{2}{3}$ grams of 18 carat gold

(c) $7\frac{2}{3}$ grams of 12 carat gold and $2\frac{1}{3}$ grams of 18 carat gold

(d) $2\frac{1}{3}$ grams of 12 carat gold and $7\frac{2}{3}$ grams of 18 carat gold

Sol : www.cbse.site/ma/cm192

Direction For Question : (118-119)

It costs a small recording company Rs 176, 800 to prepare a compact disc. This is a one-time fixed cost that covers recording, package design, and so on. Variable costs, including such things as manufacturing, marketing, and royalties, are Rs 46 per CD.

118. If the CD is sold to music shops for Rs 80 each, how many must be sold for the company to break even?

(a) 7800

(b) 2600

(c) 3900

(d) 5200

Sol : www.cbse.site/ma/cm193

119. What is the break even revenue ?

(a) ₹ 216000

(b) ₹ 314000

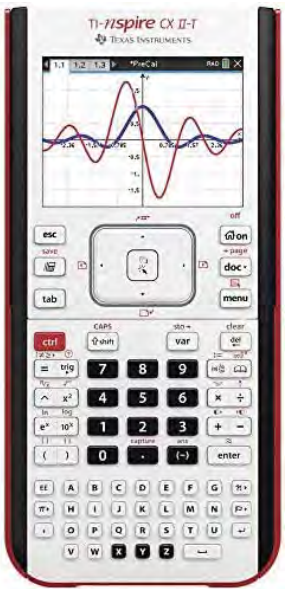
(c) ₹ 416000

(d) ₹ 231000

Sol : www.cbse.site/ma/cm193

120. Ridhima Electronics Pvt Ltd is main supplier for CASIO for electronics component. They manufactures keyboards and screens for graphing calculators at plants in Bangalore and Bhiwadi. The hourly production rates at each plant are given in the table. How many hours should each plant be operated to fill an order for exactly 4,000 keyboards and exactly 4,000 screens?

Plant	Keyboards	Screens
Bangalore	40	32
Bhiwadi	20	32



(a) Bangalore plant should be operated for 50 hours and Bhiwadi plant should be operated for 75hours.

(b) Bangalore plant should be operated for 75 hours and Bhiwadi plant should be operated for 50 hours.

(c) Bangalore plant should be operated for 80 hours and Bhiwadi plant should be operated for 45hours.

(d) Bangalore plant should be operated for 45 hours and Bhiwadi plant should be operated for 80 hours.

Sol : www.cbse.site/ma/cm194

Direction For Question : (121-122)

Orange trees thrive in warm, Mediterranean climates where there is no threat of frost. This full-sun plant produces the best fruit when provided with optimal moisture, light and nutrition, in the form of fertilization. Orange trees require fertilization three times per year. You need to increase fertilizer amounts as the tree ages and becomes established. Complete nutrition is essential for a healthy tree.

A fruit grower can use two types of fertilizer in an orange grove, brand A and brand B. Each bag of brand A contains 8 pounds of nitrogen and 4 pounds of phosphoric acid. Each bag of brand B contains 7 pounds of nitrogen and 7 pounds of phosphoric acid. Tests indicate that the grove needs 720 pounds of nitrogen and 500 pounds of phosphoric acid.

121. How many bags of brand A should be used to provide the required amounts of nitrogen and phosphoric acid?

(a) 35 bag

(b) 55 bag

(c) 28 bag
(d) 40 bag

Sol : www.cbse.site/ma/cm195

122. How many bags of brand B should be used to provide the required amounts of nitrogen and phosphoric acid?
(a) 35 bag
(b) 55 bag
(c) 28 bag
(d) 40 bag

Sol : www.cbse.site/ma/cm195

Direction For Question : (123-125)

To prove that objects of different weights fall at the same rate, Galileo dropped two objects with different weights from the Leaning Tower of Pisa in Italy. The objects hit the ground at the same time.

An object dropped off the top of Leaning Tower of Pisa falls vertically with constant acceleration. If s is the distance of the object above the ground (in feet) t seconds after its release, then s and t are related by an equation of the form $s = a + bt^2$ where a and b are constants. Suppose the object is 180 feet above the ground 1 second after its release and 132 feet above the ground 2 seconds after its release.

123. What are the values of constants a and b?
(a) –20 and 174
(b) –16 and 196
(c) 174 and –20
(d) 196 and –16

Sol : www.cbse.site/ma/cm196

124. How high is the building?
(a) 274 feet
(b) 174 feet
(c) 228 feet
(d) 196 feet

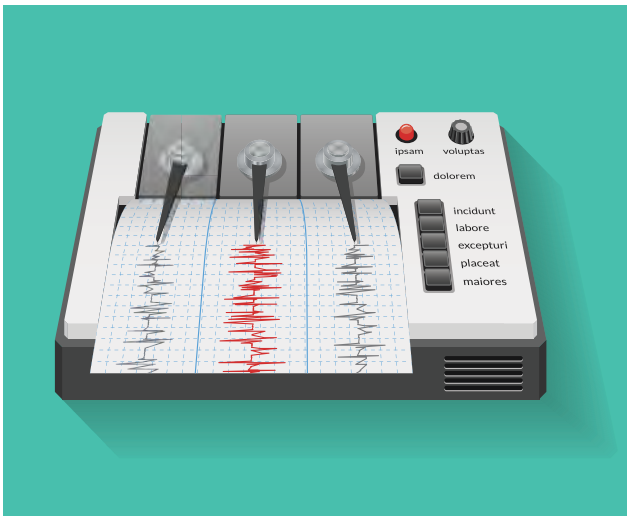
Sol : www.cbse.site/ma/cm196

125. How long does the object fall?
(a) 3.5 sec
(b) 7 sec
(c) 2.5 sec
(d) 5 sec

Sol : www.cbse.site/ma/cm196

Direction For Question : (126-127)

An earthquake emits a primary wave and a secondary wave. Near the surface of the Earth the primary wave travels at about 5 miles per second and the secondary wave at about 3 miles per second. From the time lag between the two waves arriving at a given receiving station, it is possible to estimate the distance to the quake. (The epicenter can be located by obtaining distance bearings at three or more stations.) Suppose a station measured a time difference of 16 seconds between the arrival of the two waves.



126. How long did each wave travel ?

(a) Primary wave travelled 24 second and secondary wave travelled 40 second.

(b) Primary wave travelled 40 second and secondary wave travelled 24 second.

(c) Primary wave travelled 20 second and secondary wave travelled 24 second.

(d) Primary wave travelled 24 second and secondary wave travelled 20 second.

Sol : www.cbse.site/ma/cm197

127. How far was the earthquake from the station ?

(a) 238 mile

(b) 224 mile

(c) 120 mile

(d) 240 mile

Sol : www.cbse.site/ma/cm197

Direction For Question : (128-129)

Jyoti Kumari is an Indian student from Sirhulli in the rural Darbhanga district of Bihar. She came to notice after she bicycled some 1,200 km with her injured father to reach their home village during COVID-19 lockdowns in India. This act of bravery was praised by the Senior Advisor to the President of the United States, Ivanka Trump, and Prime Minister Narendra Modi. She was given a national award, and a Bollywood film was proposed to record her story.

Jyoti travelled 90 km every day to reach her home town in Harbin. One day, when she started, after riding a certain distance, she stopped for some time to repair his bicycle. After which she completes the whole journey of 90 km at half speed in 12 hours. If the breakdown had occurred 10 km farther off, she would have done the whole journey in 11 hours.

128. Where the breakdown occurred?

(a) 60 km

(b) 48 km

(c) 32 km

(d) 44 km

Sol : www.cbse.site/ma/cm198

129. What is her original speed?

(a) 10 km/hr

(b) 20 km/hr

(c) 12 km/hr

(d) 9 km/hr

Sol : www.cbse.site/ma/cm198

Direction For Question : (130-131)

Banasthali Vidyapith, is a fully residential women's university offering courses from primary to Ph.D. level. It offers a number of UG, PG, and Doctoral level Programs under various Departments. Admission to the same is done on the basis of merit scored in qualifying examination, however, for some courses, an aptitude test is also conducted at the university level.

Swati is doing MSc. in biotechnology from Banastli Vidyapith and lives in university hostel. A part of monthly hostel charge is fixed and the remaining depends on the number of days one has taken food in the mess. When Swati takes food for 20 days, she has to pay Rs. 3,000 as hostel charges whereas Mansi who takes food for 25 days Rs. 3,500 as hostel charges.

130. What are the fixed charges of hostel?

(a) ₹ 1200

(b) ₹ 1000

(c) ₹ 1400

(d) ₹ 900

Sol : www.cbse.site/ma/cm199

131. What is the cost of food per day?

(a) ₹ 100

(b) ₹ 120

(c) ₹ 115

(d) ₹ 110

Sol : www.cbse.site/ma/cm199

Direction For Question : (132-133)

Uniform motion with current :

$(R+C)\,t=d$ With the current

$(R-C)\,t=d$ Against the current

The formula shown can be used to solve uniform motion problems involving a current, where d represents distance travelled, R is the rate of the object with no current, C is the speed of the current, and t is the time. Vibhur rows 9 km up river (against the current) in 3 hr. It only took him 1 hr to row 5 km downstream (with the current).

132. How fast can he row in still water?

(a) 1 km/h

(b) 2 km/h

(c) 3 km/h

(d) 4 km/h

Sol : www.cbse.site/ma/cm200

133. How fast was the current ?

(a) 1 km/h

(b) 2 km/h

(c) 3 km/h

(d) 4 km/h

Sol : www.cbse.site/ma/cm200

Direction For Question : (134-135)

On a recent camping trip, it took Mohinder and Aslam 2 hr to row 4 mi upstream from the drop in point to the camp site. After a leisurely weekend of camping, fishing, and relaxation, they rowed back downstream to the drop in point in just 30 min. Use this information to find

134. What is the speed of the current.

(a) 5 mph

(b) 3 mph

(c) 6 mph

(d) 4 mph

Sol : www.cbse.site/ma/cm201

135. What is the rowing speed of Mohinder and Aslam in still water.

(a) 5 mph

(b) 3 mph

(c) 6 mph

(d) 4 mph

Sol : www.cbse.site/ma/cm201

Direction For Question : (136-137)

As India's first domestic cruise liner, Angriya has made many voyages on the Mumbai-Goa sea route, along the pristine Konkan Coast. It has given India and Indians a sense of pride and happiness, while introducing the travelers to coral diversity and royal sea forts along the way.

Last year we enjoyed our summer vacation at Angariya cruise. From Mumbai to the Goa, the trip took 70 hr. After a few days of fun in the sun, the ship leaves for Mumbai, with the return trip taking 82 hr.

136. What is the cruising speed of the ship.
(a) 15 kmph
(b) 19 kmph
(c) 25 kmph
(d) 20 kmph

Sol : www.cbse.site/ma/cm202

137. What is the speed of the current.
(a) 1.5 kmph
(b) 3 kmph
(c) 2.5 kmph
(d) 2 kmph

Sol : www.cbse.site/ma/cm202

138. The point during a flight at which an aircraft is no longer capable of returning to the airfield from which it took off due to fuel considerations. Beyond this point the aircraft must proceed to some other destination.

A plane carries enough fuel for 20 hours of flight at an airspeed of 150 miles per hour. How far can it fly into a 30 mph headwind and still have enough fuel to return to its starting point?
(a) 1330 miles
(b) 1220 miles
(c) 1550 miles
(d) 1440 miles

Sol : www.cbse.site/ma/cm203

Direction For Question : (139-140)

When it was first constructed in 1889, the Eiffel Tower in Paris, France, was the tallest structure in the world. In 1975, the CN Tower in Toronto, Canada, became the world's tallest structure. The CN Tower is 153 ft less than twice the height of the Eiffel Tower, and the sum of their heights is 2799 ft.

139. How tall is CN tower?
(a) 2168 ft
(b) 984 ft
(c) 1815 ft
(d) 1214 ft

Sol : www.cbse.site/ma/cm204

140. How tall is Eiffel tower?
(a) 2168 ft
(b) 984 ft
(c) 1815 ft
(d) 1214 ft

Sol : www.cbse.site/ma/cm204

141. You are the manager of a shoe store. On Sunday

morning you are going over the receipts for the previous week's sales. A total of 320 pairs of cross-training shoes were sold. One style sold for Rs 1135 and the other sold for Rs 1495. The total receipts were Rs 420,480. The cash register that was supposed to keep track of the number of each type of shoe sold malfunctioned. Can you recover the information? If so, how many of each type were sold?

(a) 175 shoes of style one and 145 pairs shoes of style two
(b) 145 shoes of style one and 175 pairs shoes of style two
(c) 155 shoes of style one and 165 pairs shoes of style two
(d) 165 shoes of style one and 155 pairs shoes of style two

Sol : www.cbse.site/ma/cm205

142. The grocery store we use does not mark prices on its goods. My wife went to this store, purchased three 1-kg packages of almond and two 500-gram packages cashew, and paid a total of Rs 1345. Not knowing that she went to the store, I also went to the same store, purchased two 1-kg packages of almond and three 500-gram packages cashew, and paid a total of Rs 1145. Now we want to return two 1-kg packages of almond and two 500-gram packages cashew. How much will be refunded?

(a) ₹ 1234
(b) ₹ 996
(c) ₹ 1968
(d) ₹ 1486

Sol : www.cbse.site/ma/cm206

Direction For Question : (143-144)

Planning for retirement starts with thinking about your retirement goals and how long you have to meet them. Then you need to look at the types of retirement accounts that can help you raise the money to fund your future. As you save that money, you have to invest it to enable it to grow.

A recently retired couple needs Rs 120,000 per year to supplement their Social Security. They have Rs 1,500,000 to invest to obtain this income. They have decided to invest in two options : AA bonds yielding 10% per annum and a fixed deposit yielding 5%.

143. How much should be invested in AA bond to realize

exactly Rs 120,000?

(a) 900 thousand

(b) 600 thousand

(c) 500 thousand

(d) 400 thousand

Sol : www.cbse.site/ma/cm207

144. How much should be invested in fixed deposit to realize exactly Rs 120,000?

(a) 900 thousand

(b) 600 thousand

(c) 500 thousand

(d) 400 thousand

Sol : www.cbse.site/ma/cm207

145. If, after 2 years, the couple requires Rs 140,000 per year in income, how should they reallocate their investment to achieve the new amount?

(a) 1100 thousand in AA bond and 400 thousand in fixed deposit

(b) 1200 thousand in AA bond and 300 thousand in fixed deposit

(c) 1300 thousand in AA bond and 200 thousand in fixed deposit

(d) 1000 thousand in AA bond and 600 thousand in fixed deposit

Sol : www.cbse.site/ma/cm207

Direction For Question : (146-147)

A wireless store owner takes presale orders for a new smartphone and tablet. He gets 340 preorders for the smartphone and 250 preorders for the tablet. The combined value of the preorders is Rs 27,050,000. The price of a smartphone and tablet together is Rs 96500

146. How much does smartphone cost?

(a) ₹ 28500

(b) ₹ 32500

(c) ₹ 57000

(d) ₹ 65000

Sol : www.cbse.site/ma/cm208

147. How much does tablet cost?

(a) ₹ 72000

(b) ₹ 64000

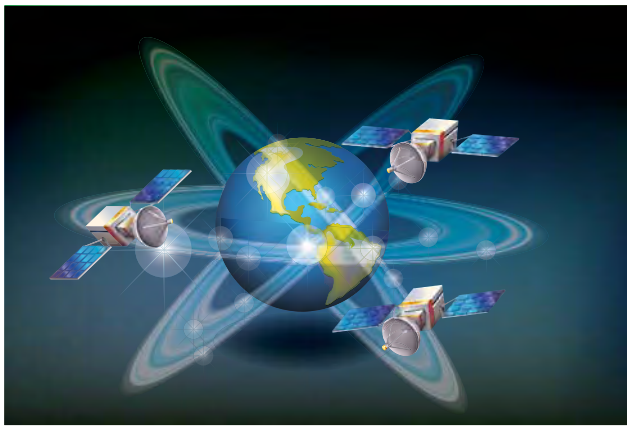
(c) ₹ 79000

(d) ₹ 68000

Sol : www.cbse.site/ma/cm208

148. In 2013 there was a total of 81 commercial and noncommercial orbital launches worldwide. In addition, the number of noncommercial orbital launches was twelve more than twice the number of commercial orbital launches. Determine the number of commercial and noncommercial orbital launches

in 2013.



(a) 58 commercial and 23 non-commercial
(b) 23 commercial and 58 non-commercial
(c) 21 commercial and 60 non-commercial
(d) 60 commercial and 21 non-commercial

Sol : www.cbse.site/ma/cm209

Direction For Question : (149-150)

Actual Number of Calories : University of Arkansas researchers discovered that we underestimate the number of calories in restaurant meals. The next time you eat out, take the number of calories you think you ate and double it. The researchers concluded that this number should be a more accurate estimate. The actual number of calories in one portion of hamburger and fries and two portions of pizza is 4240. The actual number of calories in two portions of hamburger and fries and one portion of pizza is 3980.

149. What are the actual number of calories in one portions of pizza.
(a) 1500
(b) 1240
(c) 1120
(d) 1640

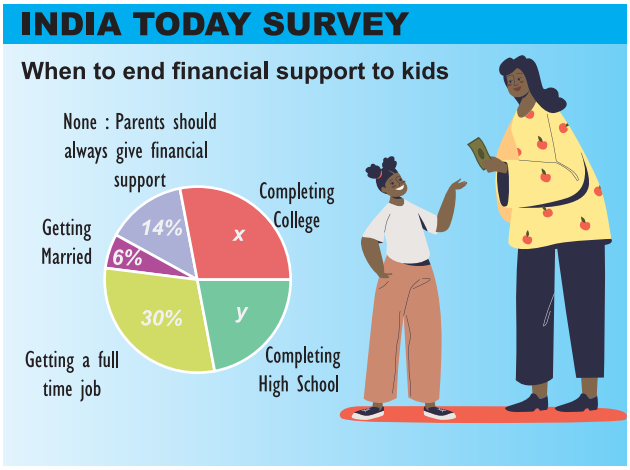
Sol : www.cbse.site/ma/cm210

150. What are the actual number of calories in one portions of hamburger and fries.
(a) 1500
(b) 1240
(c) 1120
(d) 1640

Sol : www.cbse.site/ma/cm210

Direction For Question : (151-152)

At some point, it's time to kick, or gently ease, kids off the parental gravy train. The circle graph shows the percentage of parents who think significant financial support should end at various milestones.



The difference in the percentage who would end this support after completing college and after completing high school is 6 %.

151. What is the percentage of parents who would end financial support after a child completes college.
(a) 33%
(b) 28%
(c) 32%
(d) 22%

Sol : www.cbse.site/ma/cm211

152. What is the percentage of parents who would end financial support after a child completes high school.
(a) 33%
(b) 28%
(c) 32%
(d) 22%

Sol : www.cbse.site/ma/cm211

Direction For Question : (153-157)

Masks are an additional step to help prevent people from getting and spreading COVID-19. They provide a barrier that keeps respiratory droplets from spreading. Wear a mask and take every day preventive actions in public settings.

Due to ongoing Corona virus outbreak, Wellness Medical store has started selling masks of decent quality. The store is selling two types of masks currently type A and type B.

The cost of type A mask is Rs. 15 and of type B mask is Rs. 20. In the month of April, 2020, the store sold 100 masks for total sales of Rs. 1650.

153. How many masks of each type were sold in the month of April?

(a) 40 masks of type A, and 60 masks of type B

(b) 60 masks of type A, and 40 masks of type B

(c) 70 masks of type A, and 30 masks of type B

(d) 30 masks of type A, and 70 masks of type B

Sol : www.cbse.site/ma/cm212

154. If the store had sold 50 masks of each type, what would be its sales in the month of April?

(a) ₹ 550

(b) ₹ 560

(c) ₹ 1050

(d) ₹ 1750

Sol : www.cbse.site/ma/cm212

155. Due to great demand and short supply, the store has increased the price of each type by Rs. 5 from May 1, 2020. In the month of May, 2020, the store sold 310 masks for total sales of Rs. 6875. How many masks of each type were sold in the month of May?

(a) 175 masks of type A, and 135 masks of type B

(b) 200 masks of type A, and 110 masks of type B

(c) 110 masks of type A, and 200 masks of type B

(d) 135 masks of type A, and 175 masks of type B

Sol : www.cbse.site/ma/cm212

156. What percent of masks of each type sale was increased in the month of May, compared with the sale of month April?

(a) 110% in type A and 180% in type B

(b) 180% in type A and 110% in type B

(c) 350% in type A and 150% in type B

(d) 150% in type A and 350% in type B

Sol : www.cbse.site/ma/cm212

157. What extra profit did store earn by increasing price in May month.

(a) ₹ 1550

(b) ₹ 3100

(c) ₹ 1650

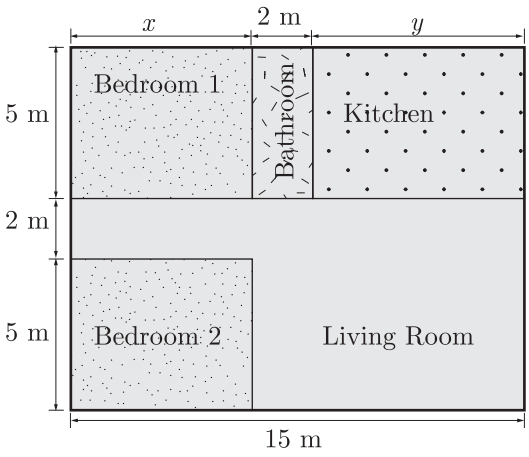
(d) ₹ 1825

Sol : www.cbse.site/ma/cm212

Direction For Question : (158-162)

An architect is a skilled professional who plans and designs buildings and generally plays a key role in their construction. Architects are highly trained in the art and science of building design. Since they bear responsibility for the safety of their buildings' occupants, architects must be professionally licensed.

Varsha is a licensed architect and design very innovative house. She has made a house layout for her client which is given below. In the layout, the design and measurements has been made such that area of two bedrooms and kitchen together is 95 sq. m.



158. Which pair of linear equations does describe this situation ?

(a) $2x+y=19$ and $x+y=13$

(b) $x+2y=19$ and $2x+y=13$

(c) $2x+y=38$ and $x+y=13$

(d) $2x+y=38$ and $2x+y=13$

Sol : www.cbse.site/ma/cm213

159. What is the length of the outer boundary of the layout.

(a) 24 m

(b) 48 m

(c) 27 m

(d) 54 m

Sol : www.cbse.site/ma/cm213

160. What is the area of bedroom 1 ?

(a) 24 m^2

(b) 30 m^2

(c) 28 m^2

(d) 24 m^2

Sol : www.cbse.site/ma/cm213

161. What is the area of living room in the layout ?

(a) 54 m^2

(b) 48 m^2

(c) 75 m^2

(d) 24 m^2

Sol : www.cbse.site/ma/cm213

162. What is the cost of laying tiles in Kitchen at the rate of Rs. 50 per sq. m ?

(a) ₹ 1500

(b) ₹ 2000

(c) ₹ 1750

(d) ₹ 3000

Sol : www.cbse.site/ma/cm213

Direction For Question : (163-167)

Dipesh bought 3 notebooks and 2 pens for Rs. 80. His friend Ramesh said that price of each notebook could be Rs. 25. Then three notebooks would cost Rs.75, the two pens would cost Rs. 5 and each pen could be for Rs. 2.50. Another friend Amar felt that Rs. 2.50 for one pen was too little. It should be at least Rs. 16. Then the price of each notebook would also be Rs.16.

Aditya also bought the same types of notebooks and pens as Dipesh. He paid 110 for 4 notebooks and 3 pens.

163. Whether the estimation of Ramesh and Amar is applicable for Aditya?

(a) Ramesh's estimation is wrong but Amar's estimation is correct.

(b) Ramesh's estimation is correct but Amar's estimation is wrong.

(c) Both estimation are correct.

(d) Ramesh's estimation is wrong but Amar's estimation is also wrong.

Sol : www.cbse.site/ma/cm214

164. Let the cost of one notebook be x and that of pen be y. Which of the following set describe the given problem ?

(a) $2x+3y=80$ and $3x+4y=110$

(b) $3x+2y=80$ and $4x+3y=110$

(c) $2x+3y=80$ and $4x+3y=110$

(d) $3x+2y=80$ and $3x+4y=110$

Sol : www.cbse.site/ma/cm214

165. What is the exact cost of the notebook?

(a) ₹ 10

(b) ₹ 20

(c) ₹ 16

(d) ₹ 24

Sol : www.cbse.site/ma/cm214

166. What is the exact cost of the pen?

(a) ₹ 10

(b) ₹ 20

(c) ₹ 16

(d) ₹ 24

Sol : www.cbse.site/ma/cm214

167. What is the total cost if they purchase the same type of 15 notebooks and 12 pens.

(a) ₹ 410

(b) ₹ 200

(c) ₹ 420

(d) ₹ 240

Sol : www.cbse.site/ma/cm214

Direction For Question : (168-172)

Mr. RK Agrawal is owner of a famous amusement park in Delhi. The ticket charge for the park is Rs 150 for children and Rs 400 for adult.

Generally he does not go to park and it is managed by team of staff. One day Mr Agrawal decided to random check the park and went there. When he checked the cash counter, he found that 480 tickets were sold and Rs 134500 was collected.

168. Let the number of children visited be x and the number of adults visited be y. Which of the following is the correct system of equations that model the problem ?

(a) $x+y=480$ and $3x+8y=2690$

(b) $x+2y=480$ and $3x+4y=2690$

(c) $x+y=480$ and $3x+4y=2690$

(d) $x+2y=480$ and $3x+8y=2690$

Sol : www.cbse.site/ma/cm215

169. How many children visited the park ?

(a) 250

(b) 500
(c) 230
(d) 460

Sol : www.cbse.site/ma/cm215

170. How many adults visited the park?
(a) 250
(b) 500
(c) 230
(d) 460

Sol : www.cbse.site/ma/cm215

171. How much amount collected if 300 children and 350 adults visited the park?
(a) ₹ 225400
(b) ₹ 154000
(c) ₹ 112500
(d) ₹ 185000

Sol : www.cbse.site/ma/cm215

172. One day total visited children and adults together is 750 and the total amount collected is Rs 212500. What are the number of children and adults visited the park ?
(a) (700, 800)
(b) (350, 400)
(c) (800, 700)
(d) (400, 350)

Sol : www.cbse.site/ma/cm215

Direction For Question : (173-177)

Jodhpur is the second-largest city in the Indian state of Rajasthan and officially the second metropolitan city of the state. Jodhpur was historically the capital of the Kingdom of Marwar, which is now part of Rajasthan. Jodhpur is a popular tourist destination, featuring many palaces, forts, and temples, set in the stark landscape of the Thar Desert. It is popularly known as the "Blue City" among people of Rajasthan and all over India. The old city circles the Mehrangarh Fort and is bounded by a wall with several gates. The city has expanded greatly outside the wall, though, over the past several decades. Jodhpur is also known for the rare breed of horses known as Marwari or Malani, which are only found here.

Last year we visited Jodhpur in a group of 25 friends. When we went mehrangarh fort we found following fare for ride :

Ride	Normal Hours Fare	Peak Hours Fare
Horse	Rs 50	3 Times
Elephant	Rs 100	2 Times

Some people choose to ride on horse and rest choose to ride on elephant.

173. First day we rode in normal hours and we paid Rs 1950 for ride. Let x be the number of horses hired and y be the number elephants hired. Which of the following is the correct system of equation that model the problem ?
(a) $2x+y=25$ and $2x+y=49$
(b) $2x+y=25$ and $2x+y=39$
(c) $x+y=25$ and $x+2y=39$
(d) $x+y=25$ and $x+2y=49$

Sol : www.cbse.site/ma/cm216

174. How many horses were hired ?
(a) 9
(b) 14
(c) 16
(d) 11

Sol : www.cbse.site/ma/cm216

175. How many elephant were hired ?
(a) 9
(b) 14
(c) 16
(d) 11

Sol : www.cbse.site/ma/cm216

176. Next day we rode in peak hours, then how much

total fare was paid by our group?

(a) ₹ 2250

(b) ₹ 2650

(c) ₹ 4450

(d) ₹ 3250

Sol : www.cbse.site/ma/cm216

177. What was the increase in total fare because of peak hours ride ?

(a) ₹ 2500

(b) ₹ 2550

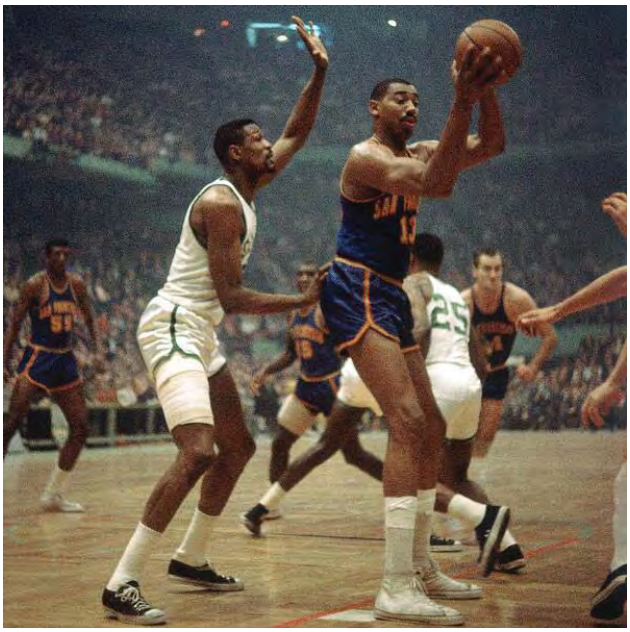
(c) ₹ 2200

(d) ₹ 1550

Sol : www.cbse.site/ma/cm216

Direction For Question : (178-182)

Wilton Norman "Wilt" Chamberlain was an American basketball player, and played in the NBA during the 1960s. At 7 feet 1 inch, he was the tallest and heaviest player in the league for most of his career, and he was one of the most famous people in the game for many years. He is the first and only basketball player to score 100 points in an NBA game.



In the 1961–1962 NBA basketball season, Wilt Chamberlain of the Philadelphia Warriors made 30 baskets. Some of the baskets were free throws (worth 1 point each) and some were field goals (worth 2 points each). The number of field goals was 10 more than the number of free throws.

178. How many field goals did he make ?

(a) 10 Goals

(b) 20 Goals

(c) 15 Goals

(d) 18 Goals

Sol : www.cbse.site/ma/cm217

179. How many free throws did he make?

(a) 10 Goals

(b) 20 Goals

(c) 15 Goals

(d) 18 Goals

Sol : www.cbse.site/ma/cm217

180. What was the total number of points scored?

(a) 50

(b) 80

(c) 60

(d) 45

Sol : www.cbse.site/ma/cm217

181. If Wilt Chamberlain played 5 games during this season, what was the average number of points per game?

(a) 5

(b) 8

(c) 10

(d) 4

Sol : www.cbse.site/ma/cm217

182. If Wilt Chamberlain played 10 games during this season, what was the average number of points per game?

(a) 6

(b) 8

(c) 4

(d) 5

Sol : www.cbse.site/ma/cm217

SELF TEST QUESTIONS

183. Given the linear equation $3x+4y=9$. Select another linear equation in these two variables such that the geometrical representation of the pair so formed is coincident lines.

(a) $3x-5y=10$

(b) $6x+8y=18$

(c) $8x+12y=18$

(d) above all

Sol : www.cbse.site/ma/cm221

184. What are the values of x and y for the following pair of linear equations ?

$$x+2y = 2$$

$$x-3y = 7$$

(a) 1 and 1

(b) 4 and –1

(c) –4 and 1

(d) 2 and 2

Sol : www.cbse.site/ma/cm222

185. For what value of k, $2x+3y=4$ and $(k+2)x+6y=3k+2$ will have infinitely many solutions ?

(a) $k=2$

(b) $k=3$

(c) $k\neq 3$

(d) $k=4$

Sol : www.cbse.site/ma/cm223

186. Given the linear equation $2x+3y-8=0$, select another linear equation in two variables such that the geometrical representation of the pair so formed is parallel lines.

(a) $5x+2y-9=0$

(b) $6x+9y+7=0$

(c) $4x+6y-16=0$

(d) above all

Sol : www.cbse.site/ma/cm224

187. Given the linear equation $2x+3y-8=0$, select another linear equation in two variables such that the geometrical representation of the pair so formed is intersecting lines.

(a) $5x+2y-9=0$

(b) $6x+9y+7=0$

(c) $4x+6y-16=0$

(d) above all

Sol : www.cbse.site/ma/cm225

188. Given the linear equation $2x+3y-8=0$, select another linear equation in two variables such that the geometrical representation of the pair so formed is coincident lines.

(a) $5x+2y-9=0$

(b) $6x+9y+7=0$

(c) $4x+6y-16=0$

(d) above all

Sol : www.cbse.site/ma/cm226

189. What are the values of m and n so that the following system of linear equation have infinite number of solutions :

$$(2m-1)x+3y-5 = 0$$

$$3x+(n-1)y-2 = 0$$

(a) $\frac{17}{4}$ and $\frac{9}{4}$

(b) $\frac{17}{4}$ and $\frac{11}{5}$

(c) $\frac{11}{5}$ and $\frac{17}{4}$

(d) $\frac{11}{5}$ and $\frac{9}{4}$

Sol : www.cbse.site/ma/cm227

190. What are the values of α and β for which the following pair of linear equations has infinite number of solutions : $2x+3y=7$; $2\alpha x+(\alpha+\beta)y=28$.

(a) 4 and 6

(b) 4 and 8

(c) 8 and 4

(d) 8 and 6

Sol : www.cbse.site/ma/cm228

Direction For Question : (191-192)

Solve the following pair of equations :

$$\frac{2}{\sqrt{x}}+\frac{3}{\sqrt{y}}=2 \text{ and } \frac{4}{\sqrt{x}}-\frac{9}{\sqrt{y}}=-1$$

191. What is the value of x

(a) 2

(b) 3

(c) 4

(d) 5

Sol : www.cbse.site/ma/cm229

192. What is the value of y?

(a) 5

(b) 7

(c) 9

(d) 11

Sol : www.cbse.site/ma/cm229

Direction For Question : (193-194)

Solve the following pair of equations :

$$2x - y + 3 = 0$$

$$3x - 5y + 1 = 0$$

193. What is the value of x?

(a) -1

(b) -2

(c) -3

(d) -4

Sol : www.cbse.site/ma/cm230

194. What is the value of y?

(a) -1

(b) -2

(c) -3

(d) -4

Sol : www.cbse.site/ma/cm230

195. Solve the following pair of equations :

$x + y = 5$ and $2x - 3y = 4$

What are the value of x and y?

(a) $x = \frac{7}{5}$ and $y = \frac{6}{5}$

(b) $x = \frac{19}{5}$ and $y = \frac{6}{5}$

(c) $x = \frac{7}{5}$ and $y = \frac{19}{5}$

(d) $x = \frac{6}{5}$ and $y = \frac{19}{5}$

Sol : www.cbse.site/ma/cm231

196. Solve the following pair of equations :

$$3x + 4y = 10$$

$$2x - 2y = 2$$

What are the value of x and y?

(a) $x = 1$ and $y = 2$

(b) $x = 2$ and $y = 1$

(c) $x = 3$ and $y = 3$

(d) $x = 2$ and $y = 2$

Sol : www.cbse.site/ma/cm232

197. For what value of k, following pair of linear equations have infinitely many solutions:

$2x + 3y = 7$ and $(k+1)x + (2k-1)y = 4k+1$

(a) $k = 5$

(b) $k \neq 5$

(c) $k = 10$

(d) $k \neq 10$

Sol : www.cbse.site/ma/cm233

198. Select the value of c if the system of equations $cx + 3y + (3 - c) = 0; 12x + cy - c = 0$ has infinitely many solutions?

(a) 4

(b) 5

(c) 6

(d) 7

Sol : www.cbse.site/ma/cm234

199. A father's age is three times the sum of the ages of his two children. After 5 years his age will be two times the sum of their ages. The present age of the father will be

(a) 40

(b) 45

(c) 35

(d) 65

Sol : www.cbse.site/ma/cm235

Direction For Question : (200-201)

Two water taps together can fill a tank in $1\frac{7}{8}$ hours. The tap with longer diameter takes 2 hours less than the tap with smaller one to fill the tank separately.

200. What is the time in which smaller diameter tap can fill the tank separately ?
(a) 2
(b) 3
(c) 4
(d) 5

Sol : www.cbse.site/ma/cm236

201. What is the time in which larger diameter tap can fill the tank separately ?
(a) 2
(b) 3
(c) 4
(d) 5

Sol : www.cbse.site/ma/cm236

Direction For Question : (202-203)

A boat goes 30 km upstream and 44 km downstream in 10 hours. In 13 hours, it can go 40 km upstream and 55 km downstream.

202. What is the speed of the stream ?
(a) 8 km/hour
(b) 3 km/hour
(c) 1 km/hour
(d) 2 km/hour

Sol : www.cbse.site/ma/cm237

203. What is the speed of the boat in still water?
(a) 8 km/hour
(b) 3 km/hour
(c) 1 km/hour
(d) 2 km/hour

Sol : www.cbse.site/ma/cm237

204. Sumit is 3 times as old as his son. Five years later he shall be two and a half times as old as his son. How old is Sumit at present?
(a) 45
(b) 50
(c) 35
(d) 42

Sol : www.cbse.site/ma/cm238

205. For what value of k, will the following pair of equations have infinitely many solutions:
$2x+3y=7$ and $(k+2)x-3(1-k)y=5k+1$
(a) 2
(b) 4
(c) 6
(d) 8

Sol : www.cbse.site/ma/cm239

Direction For Question : (206-207)

Find the value of p and q for which the system of equations represent coincident lines $2x+3y=7$, $(p+q+1)x+(p+2q+2)y=4(p+q)+1$

206. The value of q will be
(a) 1
(b) 2
(c) 3
(d) 4

Sol : www.cbse.site/ma/cm240

207. The value of p will be
(a) 3
(b) 4
(c) 5
(d) 6

Sol : www.cbse.site/ma/cm240

Direction For Question : (26-27)

Solve the following pair of equations for x and y :

$\frac{x+1}{2}+\frac{y-1}{3}=9$; $\frac{x-1}{3}+\frac{y+1}{2}=8$.

208. What is the value of x?
(a) 13
(b) 7
(c) 24
(d) 12

Sol : www.cbse.site/ma/cm241

209. What is the value of y?

(a) 15

(b) 7

(c) 24

(d) 12

Sol : www.cbse.site/ma/cm241

Direction For Question : (210-211)

Solve the following pair of equations for x and y :

$$\frac{6}{x-1}-\frac{3}{y-2}=1$$

$$\frac{5}{x-1}-\frac{1}{y-2}=2, \text{ where } x\neq 1,\ y\neq 2.$$

210. What is the value of x?

(a) 8

(b) 6

(c) 7

(d) 4

Sol : www.cbse.site/ma/cm242

211. What is the value of y?

(a) 11

(b) 5

(c) 12

(d) 8

Sol : www.cbse.site/ma/cm242

212. Seven times a two digit number is equal to four times the number obtained by reversing the order of its digits. If the difference of the digits is 3, the number will be

(a) 38

(b) 36

(c) 46

(d) 64

Sol : www.cbse.site/ma/cm243

Direction For Question : (213-214)

Solve the following pair of equations for x and y :

$$\frac{a^2}{x}-\frac{b^2}{y}=0, \frac{a^2 b}{x}+\frac{b^2 a}{y}=a+b, \qquad x\neq 0; y\neq 0.$$

213. What is the value of x?

(a) b^2

(b) a^2

(c) ab

(d) $\frac{1}{2}ab$

Sol : www.cbse.site/ma/cm244

214. What is the value of y?

(a) b^2

(b) a^2

(c) ab

(d) $\frac{1}{2}ab$

Sol : www.cbse.site/ma/cm245

215. Find whether the following pair of linear equations has a unique solutions and select correct option.

$$7x-4y=49, 5x-6y=57.$$

(a) no solution

(b) unique solution

(c) infinitely solution

(d) can't say anything

Sol : www.cbse.site/ma/cm246

216. The solution of following systems is

$$7x-4y=49, 5x-6y=57.$$

(a) $x=-7$ and $y=8$

(b) $x=6$ and $y=-7$

(c) $x=3$ and $y=-7$

(d) $x=-7$ and $y=6$

Sol : www.cbse.site/ma/cm247

217. What are the values of x and y for the following system of equation ?

$$5x+4y-4=0$$

$$x-12y-20=0$$

(a) $-\frac{3}{2}$ and 2

(b) 2 and $-\frac{3}{2}$

(c) 1 and $-\frac{3}{2}$

(d) $-\frac{3}{2}$ and 1

Sol : www.cbse.site/ma/cm248

218. The present age of the father is twice the sum of the ages of his 2 children. After 20 years, his age will be equal to the sum of the ages of his children. What is the age of the father.

(a) 38 years

(b) 40 years

(c) 30 years

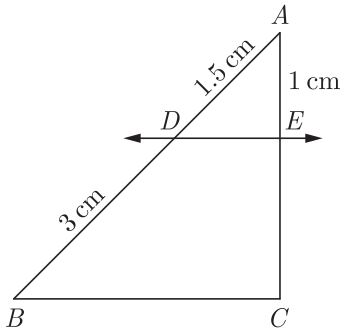
(d) 45 years

Sol : www.cbse.site/ma/cm249

CHAPTER 4

TRIANGLES

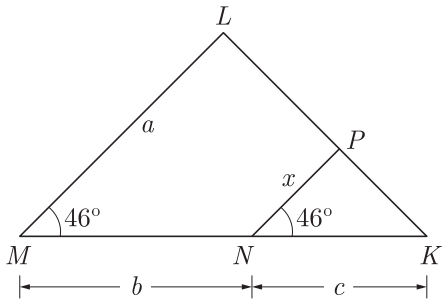
1. In the given figure, $DE \parallel BC$. The value of EC is



(a) 1.5 cm
(b) 3 cm
(c) 2 cm
(d) 1 cm

Sol : www.cbse.site/ma/fm101

2. In the given figure, x is



(a) $\frac{ab}{a+b}$
(b) $\frac{ac}{b+c}$
(c) $\frac{bc}{b+c}$
(d) $\frac{ac}{a+c}$

Sol : www.cbse.site/ma/fm102

3. ΔABC is an equilateral triangle with each side of length $2p$. If $AD \perp BC$ then the value of AD is
(a) $\sqrt{3}$
(b) $\sqrt{3}\,p$
(c) $2p$
(d) $4p$

Sol : www.cbse.site/ma/fm103

4. Which of the following statement is false?
(a) All isosceles triangles are similar.
(b) All quadrilateral are similar.
(c) All circles are similar.
(d) None of the above

Sol : www.cbse.site/ma/fm104

5. Two poles of height 6 m and 11 m stand vertically upright on a plane ground. If the distance between their foot is 12 m, then distance between their tops is
(a) 12 m
(b) 14 m
(c) 13 m
(d) 11 m

Sol : www.cbse.site/ma/fm105

Sol :

6. In a right angled ΔABC right angled at B, if P and Q are points on the sides AB and BC respectively, then
(a) $AQ^2 + CP^2 = 2(AC^2 + PQ^2)$
(b) $2(AQ^2 + CP^2) = AC^2 + PQ^2$
(c) $AQ^2 + CP^2 = AC^2 + PQ^2$
(d) $AQ + CP = \frac{1}{2}(AC + PQ)$

Sol : www.cbse.site/ma/fm106

7. It is given that, $\Delta ABC \sim \Delta EDF$ such that $AB = 5$ cm, $AC = 7$ cm, $DF = 15$ cm and $DE = 12$ cm then the sum of the remaining sides of

the triangles is
(a) 23.05 cm
(b) 16.8 cm
(c) 6.25 cm
(d) 24 cm

Sol : www.cbse.site/ma/fm107

8. The area of a right angled triangle is 40 sq cm and its perimeter is 40 cm. The length of its hypotenuse is
(a) 16 cm
(b) 18 cm
(c) 17 cm
(d) data insufficient

Sol : www.cbse.site/ma/fm108

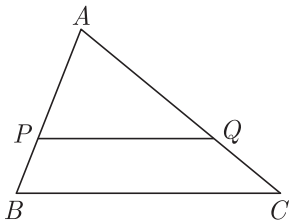
9. The areas of two similar triangles ABC and PQR are in the ratio $9:16$. If $BC = 4.5\,\text{cm}$, then the length of QR is
(a) 4 cm
(b) 4.5 cm
(c) 3 cm
(d) 6 cm

Sol : www.cbse.site/ma/fm109

10. If ratio of corresponding sides of two similar triangles is $5:6$, then what is the ratio of their areas?
(a) 6 : 5
(b) 5 : 6
(c) 25 : 36
(d) 36 : 25

Sol : www.cbse.site/ma/fm110

11. In the given figure, P and Q are points on the sides AB and AC respectively of a triangle ABC. PQ is parallel to BC and divides the triangle ABC into 2 parts, equal in area. The ratio of $PA:AB =$



(a) 1 : 1
(b) $(\sqrt{2}-1):\sqrt{2}$
(c) $1:\sqrt{2}$
(d) $(\sqrt{2}-1):1$

Sol : www.cbse.site/ma/fm111

12. It is given that $\Delta ABC \sim \Delta PQR$ with $\frac{BC}{QR} = \frac{1}{4}$. Then $\frac{\text{ar}(\Delta PRQ)}{\text{ar}(\Delta BCA)}$ is equal to
(a) 16
(b) 3
(c) $\frac{1}{4}$
(d) $\frac{1}{16}$

Sol : www.cbse.site/ma/fm112

13. If $\Delta ABC \sim \Delta APQ$ and $\text{ar}(\Delta APQ) = 4\text{ar}(\Delta ABC)$, ar (ΔABC), then the ratio of BC to PQ is
(a) 2 : 1
(b) 1 : 2
(c) 1 : 4
(d) 4 : 1

Sol : www.cbse.site/ma/fm113

14. The areas of two similar triangles are $81\,\text{cm}^2$ and $49\,\text{cm}^2$ respectively, then the ratio of their corresponding medians is
(a) 7 : 9
(b) 9 : 81
(c) 9 : 7
(d) 81 : 7

Sol : www.cbse.site/ma/fm114

15. Sides of two similar triangles are in the ratio 4 : 9. Areas of these triangles are in the ratio.
(a) 2 : 3
(b) 4 : 9
(c) 81 : 16
(d) 16 : 81

Sol : www.cbse.site/ma/fm115

16. **Assertion :** In the ΔABC, $AB = 24\,\text{cm}$, $BC = 10\,\text{cm}$ and $AC = 26\,\text{cm}$, then ΔABC is a right angle

triangle.

Reason : If in two triangles, their corresponding angles are equal, then the triangles are similar.

(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

(c) Assertion (A) is true but reason (R) is false.

(d) Assertion (A) is false but reason (R) is true.

Sol : www.cbse.site/ma/fm116

17. **Assertion :** ABC and DEF are two similar triangles such that $BC = 4\,\text{cm}$, $EF = 5\,\text{cm}$ and area of $\Delta ABC = 64\,\text{cm}^2$, then area of $\Delta DEF = 100\,\text{cm}^2$.

Reason : The areas of two similar triangles are in the ratio of the squares of the corresponding altitudes.

(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

(c) Assertion (A) is true but reason (R) is false.

Sol : www.cbse.site/ma/fm117

18. **Assertion :** $\triangle ABC \sim \triangle DEF$ such that $\text{ar}(\triangle ABC) = 36\,\text{cm}^2$ and $\text{ar}(\triangle DEF) = 49\,\text{cm}^2$ then, $AB : DE = 6 : 7$.

Reason : If $\triangle ABC \sim \triangle DEF$, then

$$\frac{ar(\triangle ABC)}{ar(\triangle DEF)} = \frac{AB^2}{DE^2} = \frac{BC^2}{EF^2} = \frac{AC^2}{DF^2}$$

(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

(c) Assertion (A) is true but reason (R) is false.

(d) Assertion (A) is false but reason (R) is true.

Sol : www.cbse.site/ma/fm118

19. ΔABC is an equilateral triangle of side $2a$, then length of one of its altitude is ..... .

(a) $a\sqrt{3}$

(b) $a2\sqrt{3}$

(c) $a3\sqrt{2}$

(d) $a\sqrt{2}$

Sol : www.cbse.site/ma/fm119

20. ΔABC and ΔBDE are two equilateral triangle such that D is the mid-point of BC. Ratio of the areas of triangles ABC and BDE is ..... .

(a) 1 : 1

(b) 3 : 1

(c) 2 : 1

(d) 4 : 1

Sol : www.cbse.site/ma/fm120

21. A ladder 10 m long reaches a window 8 m above the ground. The distance of the foot of the ladder from the base of the wall is ..... m.

(a) 8 m

(b) 2 m

(c) 6 m

(d) 4 m

Sol : www.cbse.site/ma/fm121

22. In ΔABC, $AB = 6\sqrt{3}\,\text{cm}$, $AC = 12\,\text{cm}$ and $BC = 6\,\text{cm}$, then $\angle B =$ ..... .

(a) 30°

(b) 60°

(c) 45°

(d) 90°

Sol : www.cbse.site/ma/fm122

23. The perimeters of two similar triangles are 25 cm and 15 cm respectively. If one side of the first triangle is 9 cm, then the corresponding side of second triangle is ..... .

(a) 4.2 cm

(b) 5.4 cm

(c) 20 cm

(d) 6 cm

Sol : www.cbse.site/ma/fm123

24. If $\Delta ABC \sim \Delta PQR$, and $\frac{AB}{PQ} = \frac{1}{3}$, then $\frac{ar(\Delta ABC)}{ar(\Delta PQR)} = ?$

(a) $\frac{1}{3}$

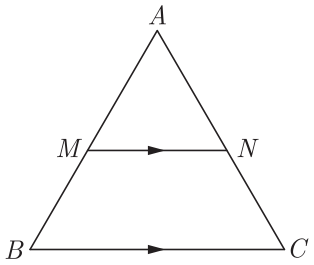
(b) $\frac{1}{9}$

(c) $\frac{8}{9}$

(d) $\frac{5}{9}$

Sol : www.cbse.site/ma/fm124

25. In figure, $MN \parallel BC$ and $AM : MB = 1:2$, then $\frac{ar(\Delta AMN)}{ar(\Delta ABC)} =$ .....



(a) $\frac{1}{3}$

(b) $\frac{1}{9}$

(c) $\frac{8}{9}$

(d) $\frac{5}{9}$

Sol : www.cbse.site/ma/fm125

26. The corresponding sides of two similar triangles are in the ratio 3 : 4, then the ratio of the areas of triangles is .....

(a) $\frac{1}{3}$

(b) $\frac{1}{9}$

(c) $\frac{9}{16}$

(d) $\frac{3}{4}$

Sol : www.cbse.site/ma/fm126

27. The perimeters of two similar triangles ΔABC and ΔPQR are 35 cm and 45 cm respectively, then the ratio of the areas of the two triangles is .....

(a) $\frac{2}{9}$

(b) $\frac{7}{9}$

(c) $\frac{49}{81}$

(d) $\frac{3}{4}$

Sol : www.cbse.site/ma/fm127

28. If $\Delta ABC \sim \Delta PQR$, $\frac{AB}{PQ} = \frac{1}{3}$, then $\frac{\text{ar}\,\Delta ABC}{\text{ar}\,\Delta PQR}$ will be

(a) $\frac{1}{3}$

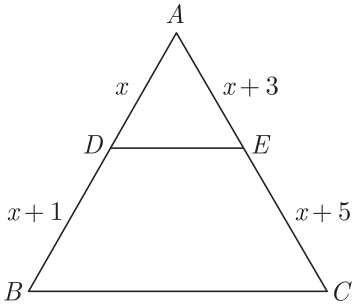
(b) $\frac{1}{9}$

(c) $\frac{8}{9}$

(d) $\frac{5}{9}$

Sol : www.cbse.site/ma/fm128

29. In $\Delta ABC, DE || BC$, the value of x will be



(a) 1

(b) 2

(c) 3

(d) 4

Sol : www.cbse.site/ma/fm129

30. ΔABC is isosceles with $AC = BC$. If $AB^2 = 2AC^2$, then the measure of $\angle C$ will be

(a) 30°

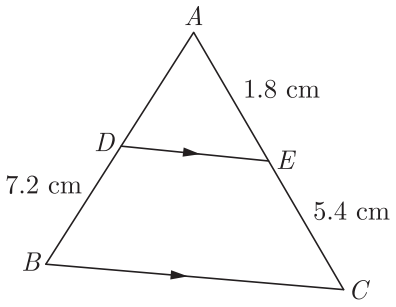
(b) 60°

(c) 45°

(d) 90°

Sol : www.cbse.site/ma/fm130

31. In Figure, $DE || BC$ and given that $AE = 1.8$ cm, $BD = 7.2$ cm and $CE = 5.4$ cm. The length of side AD will be

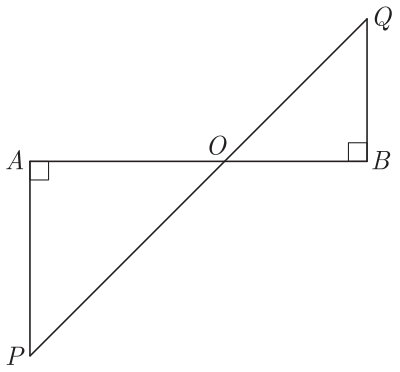


(a) 1.6 cm

(b) 1.9 cm
(c) 2.1 cm
(d) 2.4 cm

Sol : www.cbse.site/ma/fm131

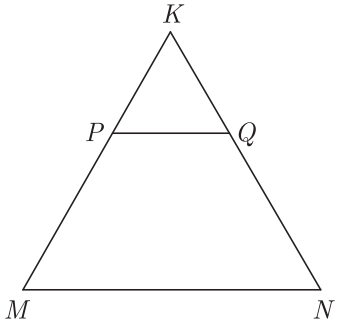
32. In the given figure, if $\angle A = 90^o, \angle B = 90^o$, $OB = 4.5$ cm $OA = 6$ cm and $AP = 4$ cm then QB will be



(a) 2 cm
(b) 3 cm
(c) 4 cm
(d) 6 cm

Sol : www.cbse.site/ma/fm132

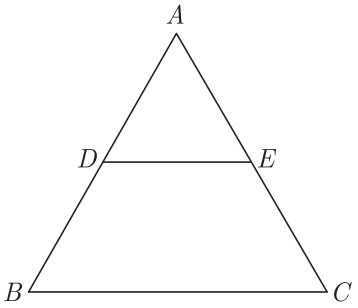
33. In the figure, PQ is parallel to MN. If $\frac{KP}{PM} = \frac{4}{13}$ and $KN = 20.4$ cm then KQ will be



(a) 4.1 cm
(b) 5.2 cm
(c) 4.8 cm
(d) 5.4 cm

Sol : www.cbse.site/ma/fm133

34. In given figure $DE || BC$. If $AD = 3c, DB = 4c$ cm and $AE = 6$ cm then EC will be



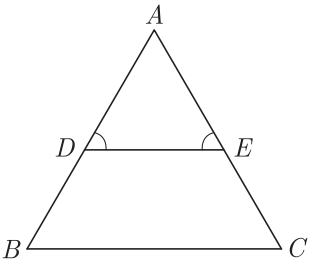
(a) 12 cm
(b) 6 cm
(c) 8 cm
(d) 10 cm

Sol : www.cbse.site/ma/fm134

35. If triangle ABC is similar to triangle DEF such that $2AB = DE$ and $BC = 8$ cm then EF will be
(a) 16 cm
(b) 14 cm
(c) 12 cm
(d) 10 cm

Sol : www.cbse.site/ma/fm135

36. In Figure $\angle D = \angle E$ and $\frac{AD}{DB} = \frac{AE}{EC}$, then ΔBAC is

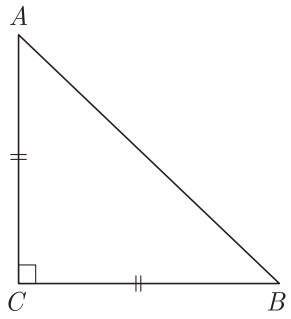


(a) isosceles triangle
(b) scalene triangle
(c) equilateral triangle
(d) right angle triangle

Sol : www.cbse.site/ma/fm136

37. In Figure, ABC is an isosceles triangle right angled

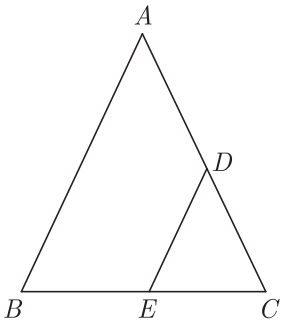
at C with $AC = 4$ cm, the length of AB will be



(a) $4\sqrt{3}$
(b) $4\sqrt{2}$
(c) $2\sqrt{2}$
(d) $3\sqrt{2}$

Sol : www.cbse.site/ma/fm137

38. In the figure of ΔABC, the points D and E are on the sides CA, CB respectively such that $DE \| AB$, $AD = 2x, DC = x+3, BE = 2x-1$ and $CE = x$. Then, value of x will be



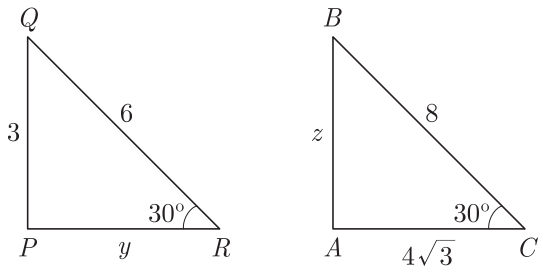
(a) $\frac{4}{5}$
(b) $\frac{1}{5}$
(c) $\frac{3}{5}$
(d) $\frac{2}{5}$

Sol : www.cbse.site/ma/fm138

39. In an equilateral triangle of side $3\sqrt{3}$ cm the length of the altitude will be
(a) 6.5 cm
(b) 5.5 cm
(c) 4.5 cm
(d) 7.5 cm

Sol : www.cbse.site/ma/fm139

40. In the given figure, $\Delta ABC \sim \Delta PQR$. The value of $y+z$ will be



(a) $2\sqrt{2}+3$
(b) $3\sqrt{3}+4$
(c) $3\sqrt{2}+1$
(d) $2\sqrt{3}+2$

Sol : www.cbse.site/ma/fm140

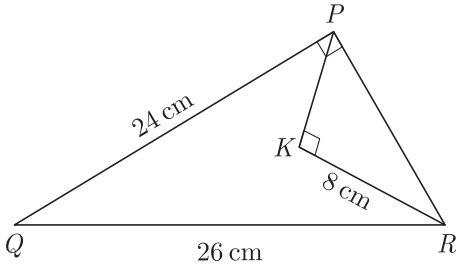
41. In an equilateral triangle of side 24 cm, the length of the altitude will be
(a) $8\sqrt{2}$
(b) $8\sqrt{3}$
(c) $12\sqrt{2}$
(d) $12\sqrt{3}$

Sol : www.cbse.site/ma/fm141

42. What is the altitude of an equilateral triangle when each of its side is a ?
(a) $\frac{1}{\sqrt{3}}a$
(b) $\frac{\sqrt{3}}{3}a$
(c) $\frac{\sqrt{3}}{4}a$
(d) $\frac{\sqrt{3}}{2}a$

Sol : www.cbse.site/ma/fm142

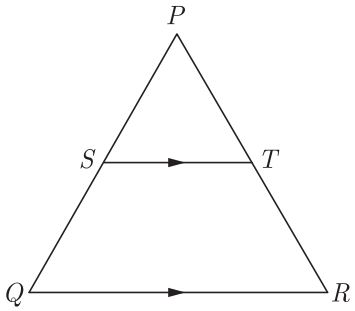
43. In the given triangle $PQR, \angle QPR = 90^\circ, PQ = 24$ cm and $QR = 26$ cm and in $\Delta PKR, \angle PKR = 90^\circ$ and $KR = 8$ cm, the length of PK will be



(a) 3 cm
(b) 4 cm
(c) 5 cm
(d) 6 cm

Sol : www.cbse.site/ma/fm143

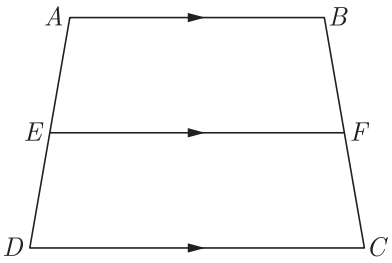
44. In the given figure, in a triangle PQR, $ST \| QR$ and $\frac{PS}{SQ} = \frac{3}{5}$ and $PR = 28$ cm, the length of PT will be



(a) 21 cm
(b) 10.5 cm
(c) 15 cm
(d) 15.5 cm

Sol : www.cbse.site/ma/fm144

45. In the given figure, if $ABCD$ is a trapezium in which $AB \| CD \| EF$, then $\frac{AE}{ED} = ?$



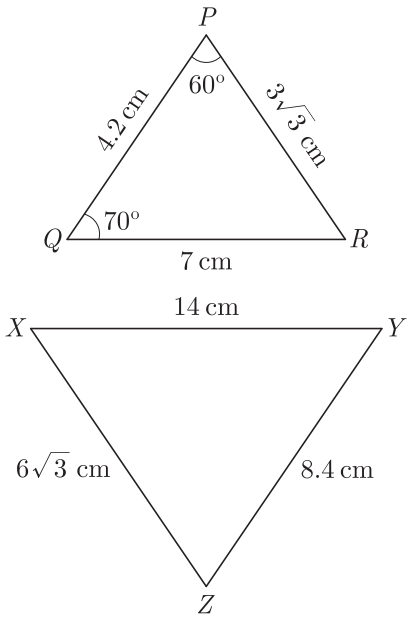
(a) $\frac{2FC}{BF}$
(b) $\frac{2BF}{FC}$
(c) $\frac{FC}{BF}$
(d) $\frac{BF}{FC}$

Sol : www.cbse.site/ma/fm145

46. In a rectangle $ABCD, E$ is a point on AB such that $AE = \frac{2}{3}AB$. If $AB = 6$ km and $AD = 3$ km, then length of DE. will be
(a) 2 km
(b) 3 km
(c) 4 km
(d) 5 km

Sol : www.cbse.site/ma/fm146

47. In the given figures, the measure of $\angle X$ will be



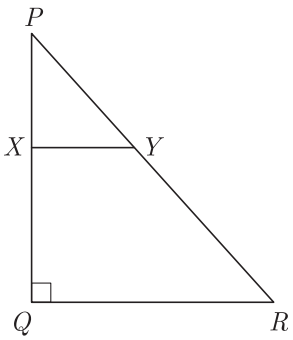
(a) 30°
(b) 60°
(c) 45°
(d) 50°

Sol : www.cbse.site/ma/fm147

Direction For Question :

In the given figure, PQR is a triangle right angled at Q and $XY \| QR$. If $PQ = 6$ cm, $PY = 4$ cm and $PX : XQ = 1 : 2$.

48. The length of PR will be



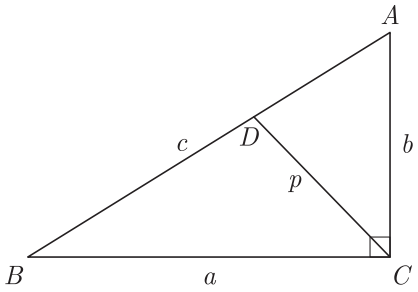
(a) 12 cm
(b) $2\sqrt{3}$ cm
(c) $6\sqrt{3}$ cm
(d) 18 cm

Sol : www.cbse.site/ma/fm148

49. The length of QR will be
(a) 16 cm
(b) $2\sqrt{3}$ cm
(c) $6\sqrt{3}$ cm
(d) 18 cm

Sol : www.cbse.site/ma/fm148

50. Triangle ABC is right angled at C. Let $BC = a$, $CA = b, AB = c$ $PQR, ST || QR$and p be the length of perpendicular from C to AB. The cp is equal to



(a) ab
(b) $\sqrt{ab}$
(c) $\frac{a+b}{2}$
(d) $2ab$

Sol : www.cbse.site/ma/fm149

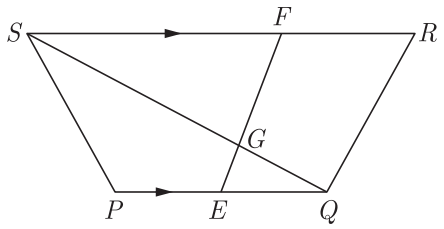
51. $ABCD$ is a trapezium in which $AB || CD$ and its diagonals intersect each other at the point O. Which of the following is correct relation ?
(a) $\frac{AO}{BO} = \frac{2DO}{CO}$
(b) $\frac{AO}{BO} = \frac{DO}{CO}$
(c) $\frac{AO}{BO} = \frac{CO}{DO}$
(d) $\frac{AO}{BO} = \frac{2CO}{DO}$

Sol : www.cbse.site/ma/fm150

52. In an equilateral triangle ABC, AD is drawn perpendicular to BC meeting BC in D. The term AD^2 is equal to
(a) $3BD^2$
(b) $2BD^2$
(c) BD^2
(d) $\frac{1}{2}BD^2$

Sol : www.cbse.site/ma/fm151

53. In the figure, $PQRS$ is a trapezium in which $PQ || RS$. On PQ and RS, there are points E and F respectively such that EF intersects SQ at G. Now the term $EQ \times GS$ is equal to



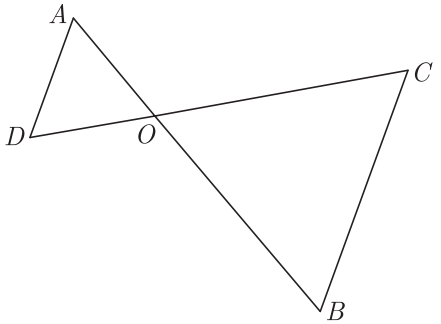
(a) $GQ \times FS$
(b) $2GQ \times FS$
(c) $3GQ \times FS$
(d) $4GQ \times FS$

Sol : www.cbse.site/ma/fm152

54. A man steadily goes 10 m due east and then 24 m due north. What is the distance from the starting point.
(a) 25 m
(b) 26 m
(c) 15 m
(d) 18 m

Sol : www.cbse.site/ma/fm153

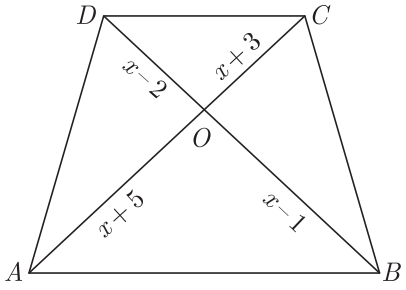
55. In the given figure, if $OA \times OB = OC \times OD$, which of the option is correct ?



(a) $\angle A = \angle C$ and $\angle B = \angle D$
(b) $\angle A = \angle B$ and $\angle C = \angle D$
(c) $\angle A = \angle D$ and $\angle B = \angle C$
(d) Above all

Sol : www.cbse.site/ma/fm154

56. In the given figure, if $AB \,||\, DC$, the value of x will be

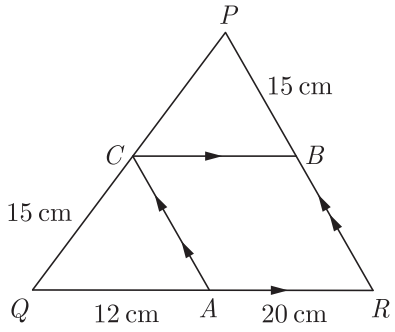


(a) 3
(b) 6
(c) 7
(d) 8

Sol : www.cbse.site/ma/fm155

Direction For Question : (57-58)

In the given figure below, $CB \,||\, QR$ and $CA \,||\, PR$. Also $AQ = 12$ cm, $AR = 20$ cm, $PB = CQ = 15$ cm. Calculate PC and BR.



57. The length PC is
(a) 15 cm
(b) 25 cm
(c) 12 cm
(d) 9 cm

Sol : www.cbse.site/ma/fm156

58. The length BR is
(a) 15 cm
(b) 25 cm
(c) 12 cm
(d) 9 cm

Sol : www.cbse.site/ma/fm156

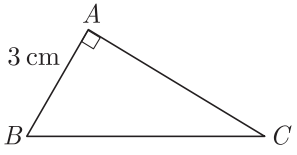
59. Triangle ΔABC is right angled at C. If p is the length of the perpendicular from C to AB and a, b, c are the lengths of the sides opposite $\angle A, \angle B$ and $\angle C$ respectively, then $\frac{1}{p^2}$ is equal to
(a) $\frac{a-b}{a^2+b^2}$
(b) $\frac{a+b}{a^2+b^2}$
(c) $\frac{1}{a^2}+\frac{1}{b^2}$
(d) $\frac{2ab}{a^2+b^2}$

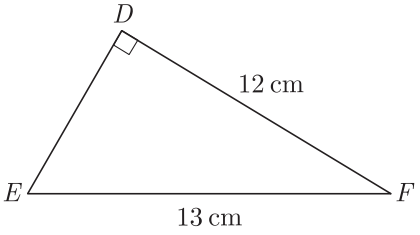
Sol : www.cbse.site/ma/fm157

60. In $\Delta ABC, DE \,||\, BC$. If $AD = x+2, DB = 3x+16$, $AE = x$ and $EC = 3x+5$, then x is equal to
(a) 2
(b) 3
(c) 4
(d) 5

Sol : www.cbse.site/ma/fm158

61. Given $\Delta ABC \sim \Delta DEF$, what is the ratio of $\frac{\text{ar}(\Delta ABC)}{\text{ar}(\Delta DEF)}$





(a) 3 : 4
(b) 9 : 25
(c) 9 : 16
(d) 1 : 16

Sol : www.cbse.site/ma/fm159

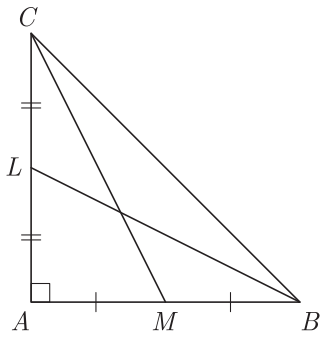
62. If in $\Delta ABC, AD$ is median and $AE \perp BC$, then $AB^2 + AC^2$ equal to
(a) $2AD^2 + BC^2$
(b) $\frac{1}{2}AD^2 + 2BC^2$
(c) $AD^2 + 2BC^2$
(d) $2AD^2 + \frac{1}{2}BC^2$

Sol : www.cbse.site/ma/fm160

63. From an airport, two aeroplanes start at the same time. If speed of first aeroplane due North is 500 km/h and that of other due East is 650 km/h then the approximate distance between the two aeroplanes after 2 hours will be
(a) 1890 km
(b) 1120 km
(c) 1640 km
(d) 2240 km

Sol : www.cbse.site/ma/fm161

64. In the given figure, BL and CM are medians of ΔABC, right angled at A. The term $4(BL^2 + CM^2)$ is equal to



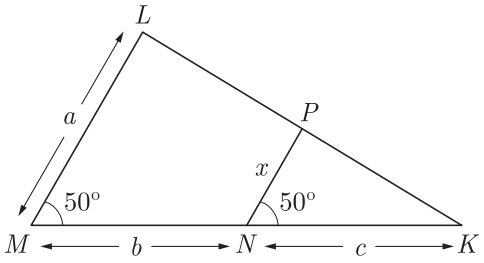
(a) $5BC^2$
(b) $4BC^2$
(c) $3BC^2$
(d) $2BC^2$

Sol : www.cbse.site/ma/fm163

65. Two similar triangles ABC and PQR have their areas $25\,cm^2$ and $49\,cm^2$ respectively. If $QR = 9.8$ cm, what is the length of side BC?
(a) 2 cm
(b) 5 cm
(c) 7 cm
(d) 4 cm

Sol : www.cbse.site/ma/fm162

66. In the given figure, the value of x is

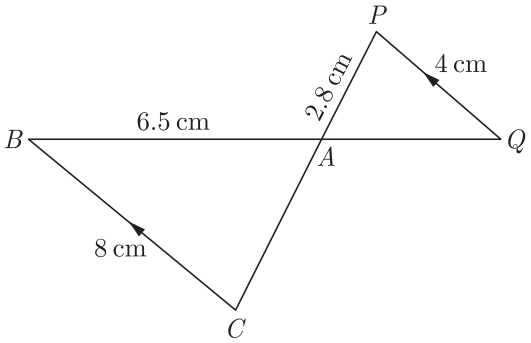


(a) $\frac{bc}{a+c}$
(b) $\frac{ac}{b+c}$
(c) $\frac{ac}{a+b}$
(d) $\frac{bc}{a+b}$

Sol : www.cbse.site/ma/fm164

Direction For Question : (67-68)
In the given figure, $BC \| PQ$ and $BC = 8$ cm, $PQ = 4$ cm, $BA = 6.5$ cm $AP = 2.8$ cm.

67. The length of CA is



(a) 2.80 cm
(b) 5.60 cm
(c) 3.25 cm

(d) 2.10 cm

Sol : www.cbse.site/ma/fm165

68. The length of AQ is

(a) 2.80 cm

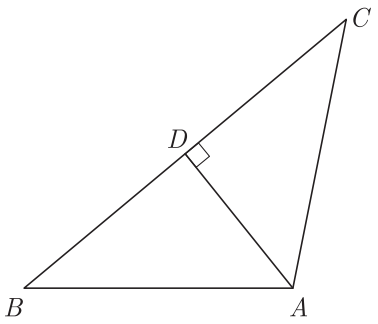
(b) 5.60 cm

(c) 3.25 cm

(d) 2.10 cm

Sol : www.cbse.site/ma/fm165

69. In the given figure, if $AD \perp BC$, the term $AB^2 + CD^2$ is equal to



(a) $2BD^2 + 3AC^2$

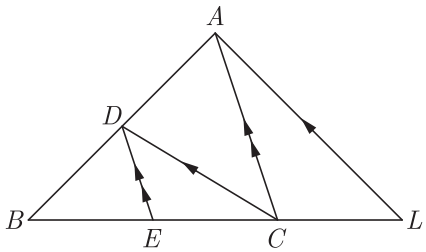
(b) $\frac{1}{2}BD^2 + AC^2$

(c) $BD^2 + \frac{1}{2}AC^2$

(d) $BD^2 + AC^2$

Sol : www.cbse.site/ma/fm166

70. In the given figure, $CD \,||\, LA$ and $DE \,||\, AC$. If $BE = 4$ cm and $EC = 2$ cm, the length of CL will be



(a) 3 cm

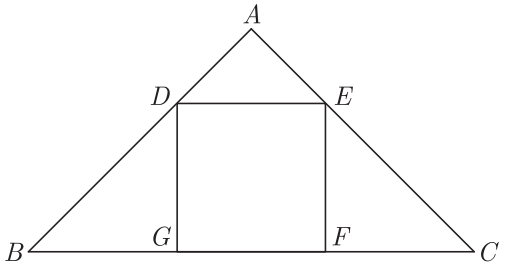
(b) 6 cm

(c) 8 cm

(d) 12 cm

Sol : www.cbse.site/ma/fm167

71. In the given figure, $DEFG$ is a square and $\angle BAC = 90°$. The term FG^2 is equal to



(a) $\frac{1}{3}BG \times FC$

(b) $BG \times FC$

(c) $\frac{2}{3}BG \times FC$

(d) $\frac{1}{4}BG \times FC$

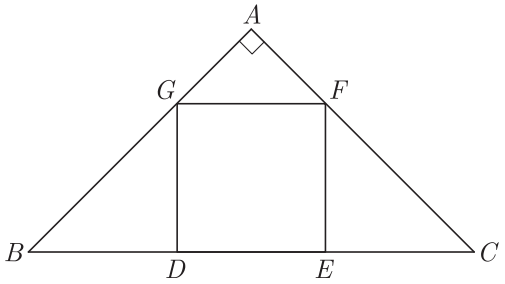
Sol : www.cbse.site/ma/fm168

72. In Figure $DEFG$ is a square in a triangle ABC right angled at A.

Which of the following statement is/are correct?

(i) $\Delta AGF \sim \Delta DBG$

(ii) $\Delta AGF \sim \Delta EFC$



(a) Only (i) is correct

(b) Only (ii) is correct

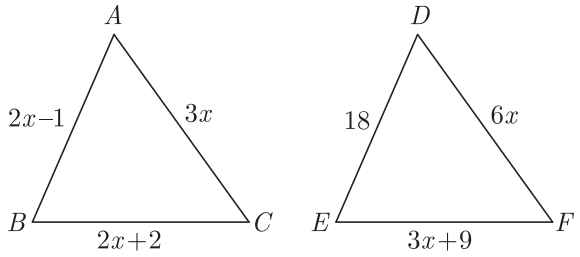
(c) Both (i) and (ii) are correct.

(d) Both are wrong.

Sol : www.cbse.site/ma/fm169

Direction For Question : (73-75)

In Figure, if $\Delta ABC \sim \Delta DEF$ and their sides of lengths (in cm) are marked along them, then find the lengths of sides of each triangle.



73. The length of side AB is
(a) 9
(b) 12
(c) 15
(d) 24

Sol : www.cbse.site/ma/fm170

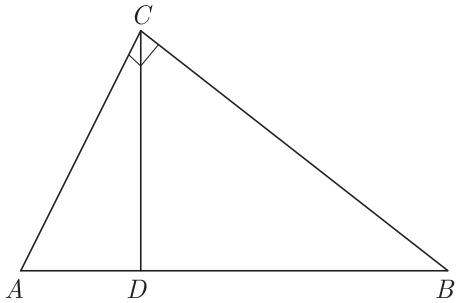
74. The length of side AC is
(a) 10
(b) 12
(c) 15
(d) 24

Sol : www.cbse.site/ma/fm170

75. The length of side DE is
(a) 30
(b) 18
(c) 15
(d) 24

Sol : www.cbse.site/ma/fm170

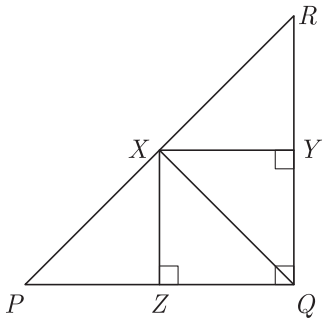
76. In given figure, $\angle ACB = 90°$ and $CD \perp AB$, the term CD^2 is equal to



(a) $\frac{1}{2}BD \times AD$
(b) $BD \times AD$
(c) $\frac{1}{3}BD \times AD$
(d) $\frac{1}{4}BD \times AD$

Sol : www.cbse.site/ma/fm171

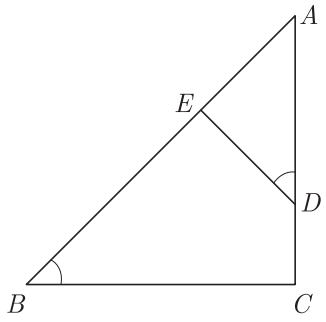
77. Triangle ΔPQR is right angled at Q. $QX \perp PR, XY \perp RQ$ and $XZ \perp PQ$ are drawn. The term XZ^2 is equal to



(a) $\frac{1}{2}PZ \times ZQ$
(b) $\frac{2}{3}PZ \times ZQ$
(c) $\frac{1}{4}PZ \times ZQ$
(d) $PZ \times ZQ$

Sol : www.cbse.site/ma/fm172

78. In ΔABC, if $\angle ADE = \angle B$, then prove that $\Delta ADE \sim \Delta ABC$. Also, if $AD = 7.6$ cm, $AE = 7.2$ cm, $BE = 4.2$ cm and $BC = 8.4$ cm, then length DE will be



(a) 5.6 cm
(b) 2.8 cm
(c) 4.8 cm
(d) 3.8 cm

Sol : www.cbse.site/ma/fm173

79. In ΔABC, the mid-points of sides BC, CA and AB are D, E and F respectively. The ratio of $ar(\Delta DEF)$

to $ar(\Delta ABC)$ is

(a) $\frac{2}{3}$

(b) $\frac{1}{3}$

(c) $\frac{1}{4}$

(d) $\frac{1}{2}$

Sol : www.cbse.site/ma/fm174

80. In the right triangle, B is a point on AC such that $AB + AD = BC + CD$. If $AB = x, BC = h$ and $CD = d$, then x will be

(a) $\frac{2hd}{2h+d}$

(b) $\frac{2hd}{h+d}$

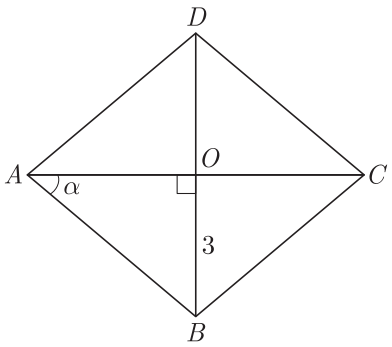
(c) $\frac{hd}{h+2d}$

(d) $\frac{hd}{2h+d}$

Sol : www.cbse.site/ma/fm175

Direction For Question : (81-82)

$ABCD$ is a rhombus whose diagonal AC makes an angle α with AB. Here $\cos\alpha = \frac{2}{3}$ and $OB = 3$ cm.



81. The length of its diagonal BD is

(a) 6 cm

(b) 5 cm

(c) $\frac{9}{\sqrt{5}}$ cm

(d) $\frac{12}{\sqrt{5}}$ cm

Sol : www.cbse.site/ma/fm176

82. The length of its diagonal AC is

(a) 6 cm

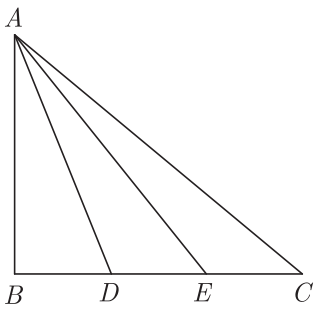
(b) 5 cm

(c) $\frac{9}{\sqrt{5}}$ cm

(d) $\frac{12}{\sqrt{5}}$ cm

Sol : www.cbse.site/ma/fm176

83. In the given figure, D and E trisect BC. The term $3AC^2 + 5AD^2$



(a) $2AE^2$

(b) $4AE^2$

(c) $6AE^2$

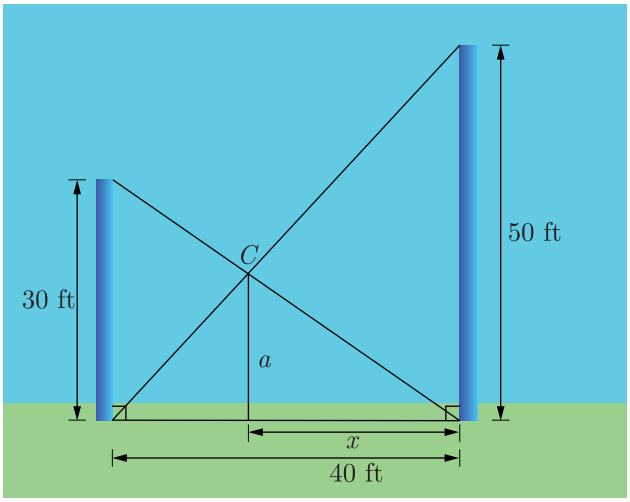
(d) $8AE^2$

Sol : www.cbse.site/ma/fm177

COMPETENCEY BASED QUESTIONS

Direction For Question : (84-86)

Two poles, 30 feet and 50 feet tall, are 40 feet apart and perpendicular to the ground. The poles are supported by wires attached from the top of each pole to the bottom of the other, as in the figure. A coupling is placed at C where the two wires cross.



84. What is the horizontal distance from C to the taller pole?

(a) 32 feet

(b) 25 feet

(c) 18 feet

(d) 30 feet

Sol : www.cbse.site/ma/fm178

85. How high above the ground is the coupling ?
(a) 12.75 feet
(b) 18.75 feet
(c) 25.25 feet
(d) 30.50 feet

Sol : www.cbse.site/ma/fm178

86. How far down the wire from the smaller pole is the coupling ?
(a) 12.75 feet
(b) 18.75 feet
(c) 25.25 feet
(d) 30.50 feet

Sol : www.cbse.site/ma/fm178

87. Aakesh wanted to determine the height of a tree on the corner of his block. He knew that a certain fence by the tree was 4 feet tall. At 3 PM, he measured the shadow of the fence to be 2.5 feet tall. Then he measured the tree's shadow to be 11.3 feet. What is the height of the tree?

(a) 12 feet
(b) 11 feet
(c) 18 feet
(d) 30 feet

Sol : www.cbse.site/ma/fm179

88. Wall Paint : A painter sets a ladder up to reach the bottom of a second-story window 16 feet above the ground. The base of the ladder is 12 feet from the house. While the painter mixes the paint, a neighbour's dog bumps the ladder, which moves the base 2 feet farther away from the house. How far up the side of the house does the ladder reach?

(a) 12 feet
(b) 20 feet
(c) 15 feet
(d) 30 feet

Sol : www.cbse.site/ma/fm180

89. Windmill : A windmill is a device for tapping the energy of the wind by means of sails mounted on a rotating shaft. Windmills still used today, mainly in parts of the world which have traditionally relied on them, are powered by electricity or water.

Anil is constructing a 8 m tall windmill supported by two wires. One wire must be 10 m long and the distance between the wires must be 21 m. Anil wanted to know what length to cut for the other wire.
(a) 17 m

(b) 11 m
(c) 18 m
(d) 30 m

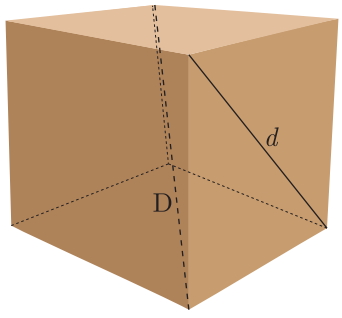
Sol : www.cbse.site/ma/fm181

90. Helicopter Patrolling : A helicopter is hovering over a crowd of people watching a police standoff in a parking garage across the street. Stewart notices the shadow of the helicopter is lagging approximately 57 m behind a point directly below the helicopter. If he is 160 cm tall and casts a shadow of 38 cm at this time, what is the altitude of the helicopter?

(a) 120 m
(b) 240 m
(c) 140 m
(d) 210 m

Sol : www.cbse.site/ma/fm182

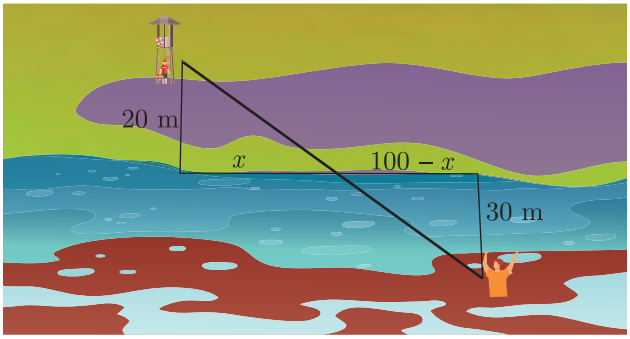
91. The boxes used to ship some washing machines are perfect cubes with edges a. What is the length of the diagonal d of one side, and the length of the interior diagonal D (through the middle of the box)?



(a) $\sqrt{2}\,a$ and $\sqrt{2}\,a$
(b) $a\sqrt{3}$ and $\sqrt{2}\,a$
(c) $\sqrt{2}\,a$ and $a\sqrt{3}$
(d) $2\sqrt{2}\,a$ and $2a\sqrt{3}$

Sol : www.cbse.site/ma/fm183

92. Swimmer in Distress : A lifeguard located 20 metre from the water spots a swimmer in distress. The swimmer is 30 metre from shore and 100 metre east of the lifeguard. Suppose the lifeguard runs and then swims to the swimmer in a direct line, as shown in the figure. How far east from his original position will he enter the water? (Hint: Find the value of x in the sketch.)



(a) 20 m
(b) 40 m
(c) 60 m
(d) 80 m

Sol : www.cbse.site/ma/fm184

93. Two Ships : Two ships are cruising together on the open ocean at 6 nautical miles per hour. One of them turns to make a angle 90° with the first and increases speed, heading for port. Assuming the first ship continues traveling at 6 knots, what is the speed of the other ship if they are 10 mi apart after 1 hr.

(a) 6 nautical mile/hour.
(b) 8 nautical mile/hour.
(c) 10 nautical mile/hour.
(d) 12 nautical mile/hour.

Sol : www.cbse.site/ma/fm185

94. Statue of a Pineapple : The Big Pineapple is a heritage-listed tourist attraction at Nambour Connection Road, Woombye, Sunshine Coast Region, Queensland, Australia. It was designed by Peddle Thorp and Harvey, Paul Luff, and Gary Smallcombe and Associates. It is also known as Sunshine Plantation. It was added to the Queensland Heritage Register on 6 March 2009.

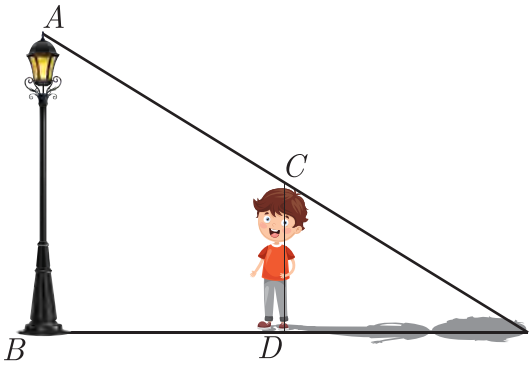
Ishita last year visited Nambour and wanted to find the height of a statue of a pineapple. She measured the pineapple's shadow and her own shadow. Her height is 156 cm and casts a shadow of 39 cm. The length of shadow of pineapple is 4 m. What is the height of the pineapple?

(a) 10 m
(b) 12 m
(c) 14 m
(d) 16 m

Sol : www.cbse.site/ma/fm186

Direction For Question : (95-99)

Rohan is very intelligent in maths. He always try to relate the concept of maths in daily life. One day he is walking away from the base of a lamp post at a speed of 1 m/s. Lamp is 4.5 m above the ground.



95. If after 2 second, length of shadow is 1 meter, what is the height of Rohan ?

(a) 145 cm
(b) 120 cm
(c) 150 cm
(d) 175 cm

Sol : www.cbse.site/ma/fm187

96. What is the minimum time after which his shadow will become larger than his original height?

(a) 1 sec
(b) 2 sec
(c) 3 sec
(d) 4 sec

Sol : www.cbse.site/ma/fm187

97. What is the distance of Rohan from pole at this point ?

(a) 2 m
(b) 1 m
(c) 3 m
(d) 4 m

Sol : www.cbse.site/ma/fm187

98. What will be the length of his shadow after 4 seconds?

(a) 2 m
(b) 1 m
(c) 3 m
(d) 4 m

Sol : www.cbse.site/ma/fm187

99. Which similarity criterion is used in solving the above problem

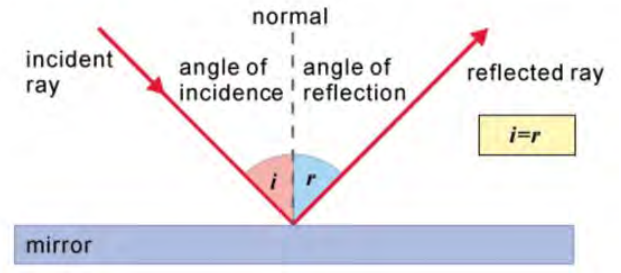
(a) SAS similarity criterion
(b) AA similarity criterion
(c) SSS similarity criterion
(d) None of these

Sol : www.cbse.site/ma/fm187

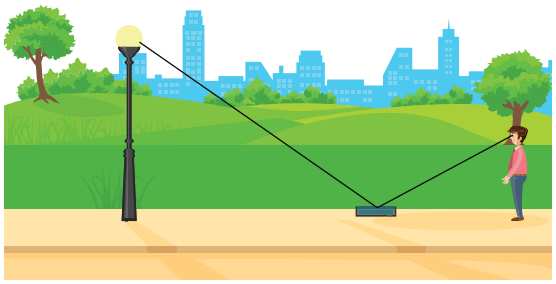
Direction For Question : (100-104)

The law of reflection states that when a ray of light reflects off a surface, the angle of incidence is equal

to the angle of reflection.



Ramesh places a mirror on level ground to determine the height of a pole (with traffic light fired on it). He stands at a certain distance so that he can see the top of the pole reflected from the mirror. Ramesh's eye level is 1.5 m above the ground. The distance of Ramesh and the pole from the mirror are 1.8 m and 6 m respectively.



100. Which criterion of similarity is applicable to similar triangles?

(a) SSA

(b) ASA

(c) SSS

(d) AA

Sol : www.cbse.site/ma/fm188

101. What is the height of the pole?

(a) 6 metres

(b) 8 metres

(c) 5 metres

(d) 4 metres

Sol : www.cbse.site/ma/fm188

102. If angle of incidence is i, find $\tan i$.

(a) $\tan i = \frac{5}{6}$

(b) $\tan i = \frac{6}{5}$

(c) $\tan i = \frac{3}{5}$

(d) $\tan i = \frac{5}{3}$

Sol : www.cbse.site/ma/fm188

103. Now Ramesh move behind such that distance between pole and Ramesh is 13 meters. He place mirror between him and pole to see the reflection of light in right position. What is the distance between mirror and Ramesh ?

(a) 7 metres

(b) 3 metres

(c) 5 metres

(d) 4 metres

Sol : www.cbse.site/ma/fm188

104. What is the distance between mirror and pole?

(a) 9 metres

(b) 8 metres

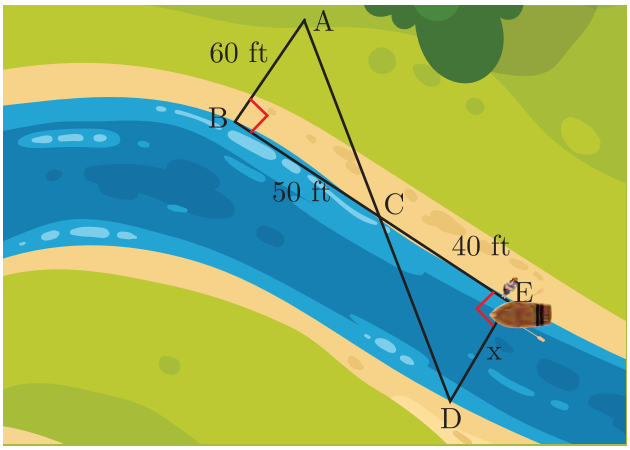
(c) 12 metres

(d) 10 metres

Sol : www.cbse.site/ma/fm188

Direction For Question : (105-109)

Tania is very intelligent in maths. She always try to relate the concept of maths in daily life. One day she plans to cross a river and want to know how far it is to the other side. She takes measurements on her side of the river and make the drawing as shown below.



105. Which similarity criterion is used in solving the above problem ?

(a) SAS similarity criterion

(b) AA similarity criterion

(c) SSS similarity criterion

(d) None of these

Sol : www.cbse.site/ma/fm189

106. Consider the following statement :

$S_1 : \angle ACB = \angle DCE$

$S_2 : \angle BAC = \angle CDE$

Which of the above statement is/are correct.

(a) S_1 and S_2 both

(b) S_1

(c) S_2

(d) None

Sol : www.cbse.site/ma/fm189

107. Consider the following statement :

$S_3 : \frac{AB}{DE} = \frac{CA}{CD}$

$S_4 : \frac{BC}{CE} = \frac{AB}{DE}$

$S_5 : \frac{CA}{CD} = \frac{DE}{AB}$

Which of the above statements are correct ?

(a) S_3 and S_5

(b) S_4 and S_5

(c) S_3 and S_4

(d) All three

Sol : www.cbse.site/ma/fm189

108. What is the distance x across the river?

(a) 96 ft

(b) 48 ft

(c) 24 ft

(d) 16 ft

Sol : www.cbse.site/ma/fm189

109. What is the approximate length of AD shown in the figure?

(a) 120 ft

(b) 160 ft

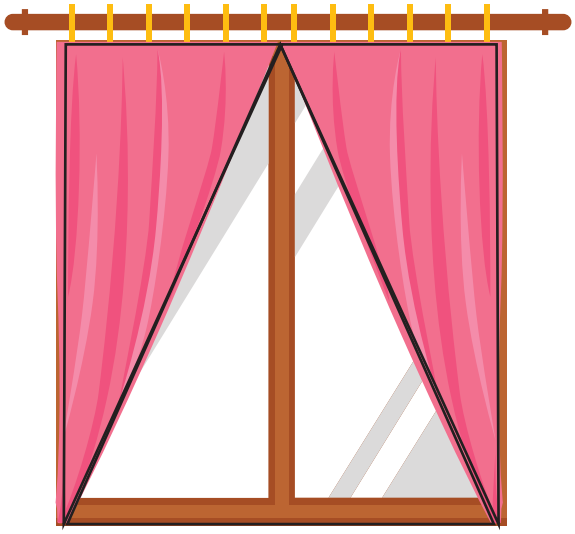
(c) 140 ft

(d) 100 ft

Sol : www.cbse.site/ma/fm189

Direction For Question : (110-114)

Rani wants to make the curtains for her window as shown in the figure. The window is in the shape of a rectangle, whose width and height are in the ratio $2:3$. The area of the window is 9600 square cm.



110. What is the shape of the window that is uncovered?

(a) Right triangle

(b) Equilateral triangle

(c) Isosceles triangle

(d) Rectangle

Sol : www.cbse.site/ma/fm190

111. What will be the ratio of two sides of each curtain (other than hypotenuse) ?

(a) 1 : 3

(b) 2 : 3

(c) 1 : 1

(d) 3 : 2

Sol : www.cbse.site/ma/fm190

112. What are the dimensions of the window ?

(a) 40 cm $\times$ 80 cm

(b) 20 cm $\times$ 60 cm

(c) 80 cm $\times$ 120 cm

(d) 40 cm $\times$ 120 cm

Sol : www.cbse.site/ma/fm190

113. What will be the perimeter of the window ?

(a) 200 cm

(b) 100 cm
(c) 400 cm
(d) 450 cm

Sol : www.cbse.site/ma/fm190

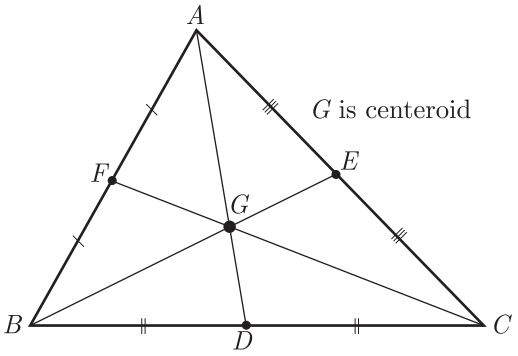
114. How much window area is covered by the curtains?
(a) 50%
(b) 75%
(c) 25%
(d) 80%

Sol : www.cbse.site/ma/fm190

Direction For Question : (115-118)

The centroid is the centre point of the object. It is also defined as the point of intersection of all the three medians. The median is a line that joins the midpoint of a side and the opposite vertex of the triangle. The centroid of the triangle separates the median in the ratio of 2 : 1. It can be found by taking the average of x- coordinate points and y-coordinate points of all the vertices of the triangle.

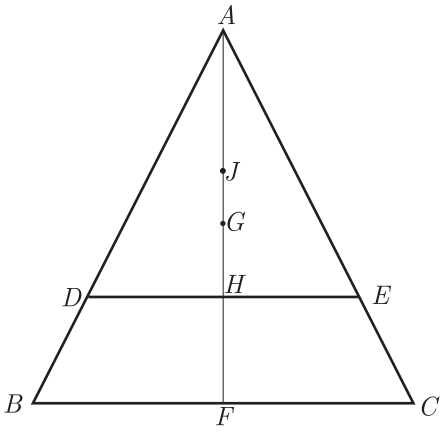
See the figure given below



Here D, E and F are mid points of sides BC, AC and AB in same order. G is centroid, the centroid divides the median in the ratio 2 : 1 with the larger part towards the vertex. Thus $AG:GD=2:1$

On the basis of above information read the question below.

If G is Centroid of $\triangle ABC$ with height h and J is centroid of $\triangle ADE$. Line DE parallel to BC, cuts the $\triangle ABC$ at a height $\frac{h}{4}$ from BC. $HF=\frac{h}{4}$.



115. What is the length of AH ?
(a) $\frac{h}{2}$
(b) $\frac{2h}{3}$
(c) $\frac{3h}{4}$
(d) $\frac{h}{4}$

Sol : www.cbse.site/ma/fm191

116. What is the distance of point A from point G ?
(a) $\frac{2AF}{3}$
(b) $\frac{3AF}{2}$
(c) $\frac{AF}{3}$
(d) $\frac{AF}{2}$

Sol : www.cbse.site/ma/fm191

117. What is the distance of point A from point J?
(a) $\frac{2AG}{3}$
(b) $\frac{3AG}{4}$
(c) $\frac{AG}{3}$
(d) $\frac{AG}{2}$

Sol : www.cbse.site/ma/fm191

118. What is the distance GJ ?
(a) $\frac{AG}{3}$
(b) $\frac{AG}{4}$
(c) $\frac{2AG}{3}$
(d) $\frac{AG}{2}$

Sol : www.cbse.site/ma/fm191

SELF TEST QUESTIONS

119. Given $\Delta ABC \sim \Delta PQR$, if $\frac{AB}{PQ} = \frac{1}{3}$, then $\frac{ar(\Delta ABC)}{ar(\Delta PQR)} =$ .....

(a) 1 : 4
(b) 1 : 8
(c) 1 : 9
(d) 1 : 16

Sol : www.cbse.site/ma/fm219

120. It is given that $\Delta ABC \sim \Delta PQR$ with $\frac{BC}{QR} = \frac{1}{4}$. Then $\frac{\text{ar}(\Delta PRQ)}{\text{ar}(\Delta BCA)}$ is equal to

(a) 16
(b) 3
(c) $\frac{1}{4}$
(d) $\frac{1}{16}$

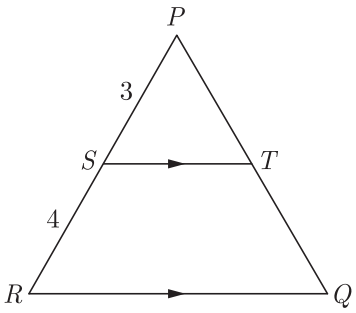
Sol : www.cbse.site/ma/fm220

121. In ΔPQR, S and T are points on the sides PQ and PR respectively, such that $ST \parallel QR$. If $PT = 2$ cm and $TR = 4$ cm, what is the ratio of the areas of ΔPST and ΔPQR?

(a) 1 : 4
(b) 1 : 8
(c) 1 : 9
(d) 1 : 16

Sol : www.cbse.site/ma/fm221

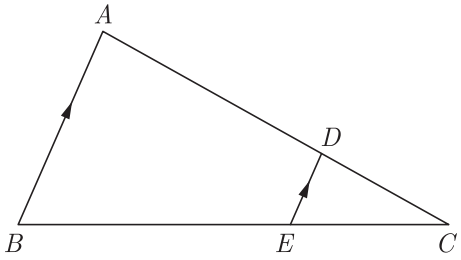
122. In the given figure, $ST || RQ, PS = 3$ cm and $SR = 4$ cm. What is the ratio of the area of ΔPST to the area of ΔPRQ ?



(a) 9 : 7
(b) 16 : 49
(c) 8 : 36
(d) 9 : 49

Sol : www.cbse.site/ma/fm222

123. In given figure, D is a point on AC such that $AD = 2CD$, also $DE || AB$. What is the value of ratio $\frac{\text{ar}(\Delta ACB)}{\text{ar}(\Delta DCE)}$?



(a) 1 : 4
(b) 1 : 8
(c) 1 : 9
(d) 1 : 16

Sol : www.cbse.site/ma/fm223

124. ABC is a triangle, PQ is the line segment intersecting AB in P and AC in Q such that $PQ || BC$ and divides ΔABC into two parts, the ratio $BP : AB$ is equal to

(a) $(\sqrt{2} - 1) : \sqrt{2}$
(b) $(\sqrt{2} + 1) : \sqrt{2}$
(c) $\sqrt{2} : (\sqrt{2} + 1)$
(d) $\sqrt{2} : (\sqrt{2} - 1)$

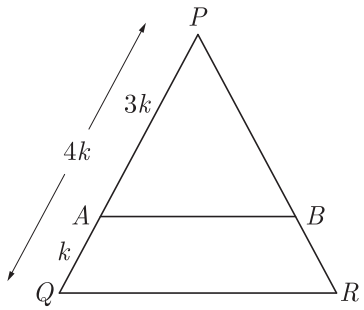
Sol : www.cbse.site/ma/fm224

125. A ladder 25 m long just reaches the top of a building 24 m high from the ground. What is the distance of the foot of ladder from the base of the building?

(a) 9 m
(b) 10.5 m
(c) 14 m
(d) 7 m

Sol : www.cbse.site/ma/fm225

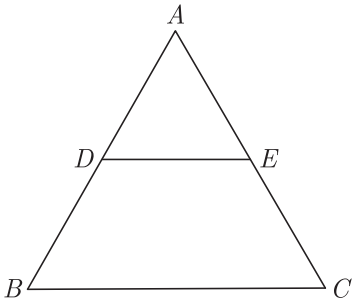
126. In the given figure, $\frac{PA}{AQ} = \frac{BR}{BR} = 3$. If the area of ΔPQR is $32\,\text{cm}^2$, then the area of the quadrilateral $AQRB$ will be



(a) 14 cm^2
(b) 7 cm^2
(c) 12 cm^2
(d) 6 cm^2

Sol : www.cbse.site/ma/fm226

127. In Figure, $DE \,||\, BC$, $AD = 1\,\text{cm}$ and $BD = 2\,\text{cm}$. What is the ratio of the $\text{ar}(\Delta ABC)$ to the $\text{ar}(\Delta ADE)$?



(a) 9 : 1
(b) 4 : 1
(c) 3 : 1
(d) 8 : 1

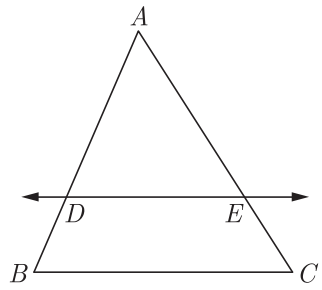
Sol : www.cbse.site/ma/fm227

128. Vertical angles of two isosceles triangles are equal. If their areas are in the ratio 16 : 25, then the ratio of their altitudes drawn from vertex to the opposite side will be

(a) $\frac{1}{5}$
(b) $\frac{3}{5}$
(c) $\frac{2}{5}$
(d) $\frac{4}{5}$

Sol : www.cbse.site/ma/fm232

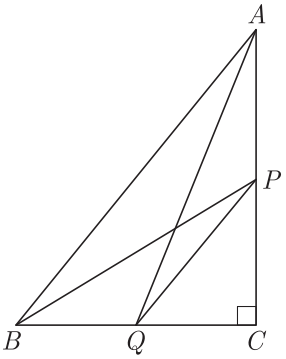
129. In Figure, in ΔABC, $DE \parallel BC$ such that $AD = 2.4\,\text{cm}$, $AB = 3.2$ cm and $AC = 8$ cm, then what is the length of AE?



(a) 2 cm
(b) 4 cm
(c) 5 cm
(d) 6 cm

Sol : www.cbse.site/ma/fm228

130. If P and Q are the points on side CA and CB respectively of ΔABC, right angled at C, then that $(AQ^2 + BP^2) = (AB^2 + PQ^2)$ is equal to



(a) $2(AB^2 + PQ^2)$
(b) $(2AB^2 + PQ^2)$
(c) $(AB^2 + 2PQ^2)$
(d) $(AB^2 + PQ^2)$

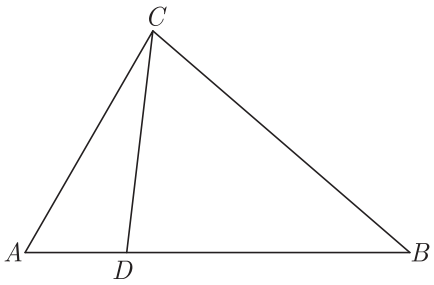
Sol : www.cbse.site/ma/fm229

131. Two right triangles ABC and DBC are drawn on the same hypotenuse BC and on the same side of BC. If AC and BD intersect at P, then $AP \times PC$ is equal to

(a) $3BP \times DP$
(b) $2BP \times DP$
(c) $BP \times DP$
(d) $\frac{1}{2}BP \times DP$

Sol : www.cbse.site/ma/fm230

132. In the given figure, if $\angle ACB = \angle CDA$, $AC = 6$ cm and $AD = 3$ cm, then the length of AB will be



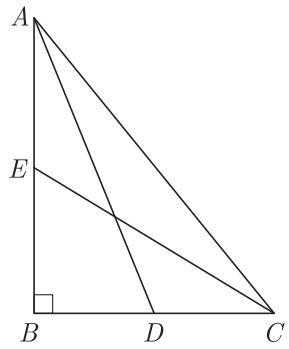
(a) 6 cm
(b) 4 cm
(c) 12 cm
(d) 8 cm

Sol : www.cbse.site/ma/fm231

133. In $\Delta ABC, AD \perp BC$ and point D lies on BC such that $2DB = 3CD$. The term AB^2.
(a) $\frac{1}{5}AC^2 + BC^2$
(b) $AC^2 + \frac{1}{5}BC^2$
(c) $AC^2 + 5BC^2$
(d) $5AC^2 + BC^2$

Sol : www.cbse.site/ma/fm233

134. In the figure, ABC is a right triangle, right angled at B. AD and CE are two medians drawn from A and C respectively. If $AC = 5$ cm and $AD = \frac{3\sqrt{5}}{2}$ cm, the length of CE will be



(a) 4 cm
(b) 6 cm
(c) $2\sqrt{5}$ cm
(d) $4\sqrt{5}$ cm

Sol : www.cbse.site/ma/fm234

Direction For Question : (17-18)
In a right triangle ABC, right angled at C. P and Q are points of the sides CA and CB respectively, which divide these sides in the ratio $2:1$.

135. The term AQ^2 is equal to
(a) $BC^2 + \frac{9}{4}AC^2$
(b) $\frac{4}{9}BC^2 + AC^2$
(c) $BC^2 + \frac{4}{9}AC^2$
(d) $BC^2 + \frac{4}{9}AC^2$

Sol : www.cbse.site/ma/fm235

136. The term $AQ^2 + BP^2$ is equal to
(a) $\frac{13}{9}AB^2$
(b) $\frac{9}{13}AB^2$
(c) $\frac{9}{8}AB^2$
(d) $\frac{8}{9}AB^2$

Sol : www.cbse.site/ma/fm236

137. What is the length of the second diagonal of a rhombus, whose side is 5 cm and one of the diagonals is 6 cm?
(a) 8 cm
(b) 4 cm
(c) 12 cm
(d) 16 cm

Sol : www.cbse.site/ma/fm237

138. Triangle ABC is an isosceles triangle in which $AB = AC = 10$ cm $BC = 12$ cm. A rectangle $PQRS$ is inside the isosceles triangle. Given $PQ = SR = y$, $PS = PR = 2x$. The value of x is
(a) $3 - \frac{1}{4}y$
(b) $3 - \frac{3}{4}y$
(c) $6 - \frac{1}{4}y$
(d) $6 - \frac{3}{4}y$

Sol : www.cbse.site/ma/fm238

139. If ΔABC is an obtuse angled triangle, obtuse angled at B and if $AD \perp CB$. Term AC^2 is equal to
(a) $2AB^2 + 2BC^2 + BC \times BD$
(b) $AB^2 + BC^2 + 2BC \times BD$
(c) $AB^2 + BC^2 + BC \times BD$
(d) $AB^2 + BC^2 + \frac{1}{2}BC \times BD$

Sol : www.cbse.site/ma/fm239

140. If A be the area of a right triangle and b be one of the sides containing the right angle, the length of the altitude on the hypotenuse is

(a) $\frac{4Ab}{\sqrt{b^4+2A^2}}$

(b) $\frac{2Ab}{\sqrt{b^4+A^2}}$

(c) $\frac{2Ab}{\sqrt{b^4+4A^2}}$

(d) $\frac{4Ab}{\sqrt{b^4+A^2}}$

Sol : www.cbse.site/ma/fm240

141. In an equilateral triangle ABC, D is a point on the side BC such the $BD = \frac{1}{3}BC$. The term AD^2 is equal to

(a) $\frac{9}{7}AB^2$

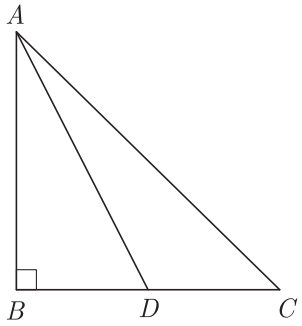
(b) $\frac{7}{9}AB^2$

(c) $\frac{4}{5}AB^2$

(d) $\frac{5}{4}AB^2$

Sol : www.cbse.site/ma/fm241

142. In the given figure, ABC is a right angled triangle, $\angle B = 90^\circ$. If D is the mid-point of BC, then AC^2 equal to



(a) $3AD^2 + CD^2$

(b) $AD^2 + 3CD^2$

(c) $3AD^2 + \frac{1}{3}CD^2$

(d) $\frac{1}{3}AD^2 + 3CD^2$

Sol : www.cbse.site/ma/fm242

143. If the diagonals of a quadrilateral divide each other proportionally, then it is a

(a) trapezium

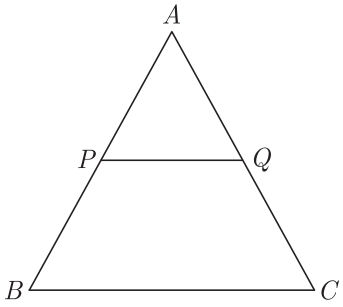
(b) square

(c) rectangle

(d) rhombus

Sol : www.cbse.site/ma/fm243

144. In the given figure, P and Q are the points on the sides AB and AC respectively of ΔABC, such that $AP = 3.5$ cm, $PB = 7$ cm, $AQ = 3$ cm and $QC = 6$ cm. If $PQ = 4.5$ cm, the length BC. will be



(a) 10.5 cm

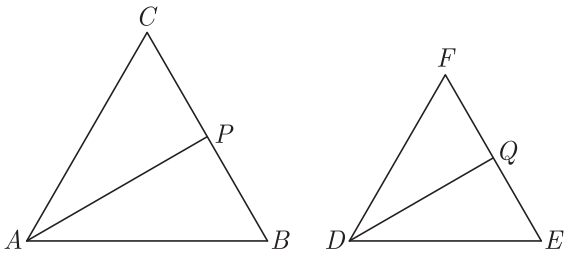
(b) 12.5 cm

(c) 13.5 cm

(d) 11.5 cm

Sol : www.cbse.site/ma/fm244

145. In given figure $\Delta ABC \sim \Delta DEF$. AP bisects $\angle CAB$ and DQ bisects $\angle FDE$.



Consider the following statement:

(1) $\frac{AP}{DQ} = \frac{AB}{DE}$

(2) $\Delta CAP \sim \Delta FDQ$

Which of the above are correct statement?

(a) only 1

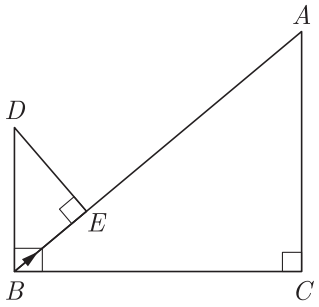
(b) only 2

(c) both 1 and 2

(d) none

Sol : www.cbse.site/ma/fm245

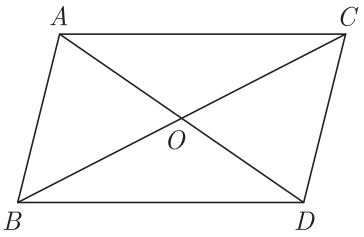
146. In the given figure, $DB \perp BC, DE \perp AB$ and $AC \perp BC$. The term $\frac{BE}{DE}$ is equal to



(a) $\frac{AC}{BC}$
(b) $\frac{BC}{AC}$
(c) $AC \times BC$
(d) $AC + BC$

Sol : www.cbse.site/ma/fm246

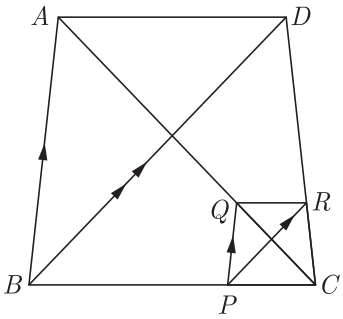
147. In the given figure, ΔABC and ΔABC and ΔDBC are on the same base BC. AD and BC intersect at O. Term $\frac{ar(\Delta ABC)}{ar(\Delta DBC)}$ is equal to



(a) $\frac{DO}{AO}$
(b) $\frac{AO}{DO}$
(c) $\frac{DO+AO}{AO}$
(d) $\frac{DO+AO}{DO}$

Sol : www.cbse.site/ma/fm247

148. In the given figure, two triangles ABC and DBC lie on the same side of BC such that $PQ \,||\, BA$ and $PR \,||\, BD$. Which of the following is correct option ?



(a) $PR \,||\, BD$
(b) $QR \,||\, AD$
(c) (a) and (b)
(d) none

Sol : www.cbse.site/ma/fm248

149. The perpendicular AD on the base BC of a ΔABC intersects BC at D so that $DB = 3CD$. The term AB^2 is equal to
(a) $2AC^2 + BC^2$
(b) $AC^2 + 2BC^2$
(c) $\frac{1}{2}AC^2 + 2BC^2$
(d) $AC^2 + \frac{1}{2}BC^2$

Sol : www.cbse.site/ma/fm249

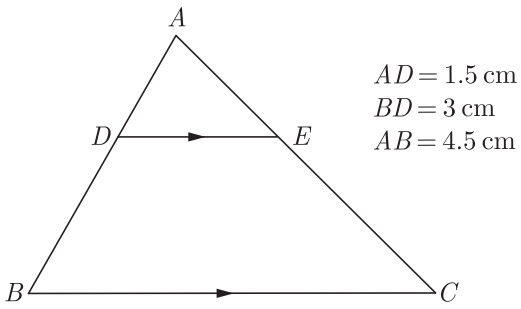
150. Diagonals of a trapezium $PQRS$ intersect each other at the point $O, PQ \,||\, RS$ and $PQ = 3RS$. What is the ratio of the areas of triangles POQ and ROS?
(a) 9 : 1
(b) 8 : 1
(c) 3 : 1
(d) 16 : 1

Sol : www.cbse.site/ma/fm250

151. Let $\Delta ABC \sim \Delta DEF$. if $\text{ar}(\Delta ABC) = 100\,\text{cm}^2$, $\text{ar}(DEF) = 196\,\text{cm}^2$, and $DE = 7$, then what is the length of side AB?
(a) 2 cm
(b) 5 cm
(c) 7 cm
(d) 4 cm

Sol : www.cbse.site/ma/fm251

152. In the given figure, $DE \| BC$. If $AD = 1.5$ cm $BD = 2AD$, then what is the value of $\frac{\text{ar}(\Delta\, ADE)}{\text{ar}(\square BCED)}$?



(a) 1 : 4
(b) 1 : 8
(c) 1 : 9
(d) 1 : 16

Sol : www.cbse.site/ma/fm252

153. The sides AB and AC and the perimeter P_1 of $\Delta\, ABC$ are respectively three times the corresponding sides DE and DF and the parameter P_2 of $\Delta\, DEF$. What is the value of $\frac{\text{ar}(\Delta\, ABC)}{\text{ar}(\Delta\, DEF)}$?

(a) 4
(b) 8
(c) 9
(d) 16

Sol : www.cbse.site/ma/fm253

CHAPTER 5

COORDINATE GEOMETRY

1. The point P on x-axis equidistant from the points $A(-1,0)$ and $B(5,0)$ is
(a) (2, 0)
(b) (0, 2)
(c) (3, 0)
(d) $(-3,5)$

Sol : www.cbse.site/ma/gm101

2. If the point P (6, 2) divides the line segment joining $A(6,5)$ and $B(4,y)$ in the ratio $3:1$ then the value of y is
(a) 4
(b) 3
(c) 2
(d) 1

Sol : www.cbse.site/ma/gm102

3. The co-ordinates of the point which is reflection of point $(-3,5)$ in x-axis are
(a) (3, 5)
(b) (3, -5)
(c) $(-3,-5)$
(d) $(-3,5)$

Sol : www.cbse.site/ma/gm103

4. The distance between the points $(a\cos\theta + b\sin\theta,\ \ 0)$, and $(0,\ \ a\sin\theta - b\cos\theta)$ is
(a) a^2+b^2
(b) a^2-b^2
(c) $\sqrt{a^2+b^2}$
(d) $\sqrt{a^2-b^2}$

Sol : www.cbse.site/ma/gm104

5. If the point $P(k,\ 0)$ divides the line segment joining the points $A(2,-2)$ and $B(-7,4)$ in the ratio 1 : 2, then the value of k is
(a) 1
(b) 2
(c) -2
(d) -1

Sol : www.cbse.site/ma/gm105

6. The coordinates of a point A on y-axis, at a distance of 4 units from x-axis and below it are
(a) (4, 0)
(b) (0, 4)
(c) $(-4,0)$
(d) (0, -4)

Sol : www.cbse.site/ma/gm106

7. The distance of the point $(-12,\ 5)$ from the origin is
(a) 12
(b) 5
(c) 13
(d) 169

Sol : www.cbse.site/ma/gm107

8. Distance of point $P(3,4)$ from x-axis is
(a) 3 units
(b) 4 units
(c) 5 units
(d) 1 units

Sol : www.cbse.site/ma/gm108

9. The distance of the point $P(-3,-4)$ from the x -axis (in units) is
(a) 3
(b) -3
(c) 4
(d) 5

10. If $A(\frac{m}{3}, 5)$ is the mid-point of the line segment joining the points $Q(-6,7)$ and $R(-2,3)$, then the value of m is
(a) -12
(b) -4
(c) 12
(d) -6

Sol : www.cbse.site/ma/gm110

11. The mid-point of the line-segment AB is $P(0,4)$, if the coordinates of B are $(-2, 3)$ then the coordinates of A are
(a) $(2, 5)$
(b) $(-2,-5)$
(c) $(2, 9)$
(d) $(-2,11)$

Sol : www.cbse.site/ma/gm111

12. x-axis divides the line segment joining $A(2,-3)$ and $B(5,6)$ in the ratio
(a) 2 : 3
(b) 3 : 5
(c) 1 : 2
(d) 2 : 1

Sol : www.cbse.site/ma/gm112

13. The point which divides the line segment joining the points $(8,-9)$ and $(2, 3)$ in the ratio 1 : 2 internally lies in the
(a) I quadrant
(b) II quadrant
(c) III quadrant
(d) IV quadrant

Sol : www.cbse.site/ma/gm113

14. If the centre of a circle is $(3, 5)$ and end points of a diameter are $(4, 7)$ and $(2, y)$, then the value of y is
(a) 3
(b) -3
(c) 7
(d) 4

Sol : www.cbse.site/ma/gm114

15. If the distance between the points $A(4, p)$ and $B(1,0)$ is 5 units then the value(s) of p is(are)
(a) 4 only
(b) -4 only
(c) ± 4
(d) 0

Sol : www.cbse.site/ma/gm115

16. If the points $(a,0)$, $(0,b)$ and $(1, 1)$ are collinear, then $\frac{1}{a}+\frac{1}{b}$ equals
(a) 1
(b) 2
(c) 0
(d) -1

Sol : www.cbse.site/ma/gm116

17. If the points $A(4,3)$ and $B(x,5)$ are on the circle with centre $O(2,3)$, then the value of x is
(a) 0
(b) 1
(c) 2
(d) 3

Sol : www.cbse.site/ma/gm117

18. The ratio in which the point $(2, y)$ divides the join of $(-4,3)$ and $(6, 3)$, hence the value of y is
(a) $2:3, y=3$
(b) $3:2, y=4$
(c) $3:2, y=3$
(d) $3:2, y=2$

Sol : www.cbse.site/ma/gm118

19. The point on the x-axis which is equidistant from the points $A(-2,3)$ and $B(5,4)$ is
(a) $(0, 2)$
(b) $(2, 0)$
(c) $(3, 0)$
(d) $(-2,0)$

Sol : www.cbse.site/ma/gm119

20. C is the mid-point of PQ, if P is $(4, x)$, C is $(y,-1)$

and Q is $(-2, 4)$, then x and y respectively are
(a) -6 and 1
(b) -6 and 2
(c) 6 and -1
(d) 6 and -2

Sol : www.cbse.site/ma/gm120

21. If three points (0, 0), $(3, \sqrt{3})$ and $(3, \lambda)$ form an equilateral triangle, then λ equals
(a) 2
(b) -3
(c) -4
(d) None of these

Sol : www.cbse.site/ma/gm121

22. If $x-2y+k=0$ is a median of the triangle whose vertices are at points $A(-1, 3)$, $B(0, 4)$ and $C(-5, 2)$,then the value of k is
(a) 2
(b) 4
(c) 6
(d) 8

Sol : www.cbse.site/ma/gm122

23. The centroid of the triangle whose vertices are $(3, -7)$,$(-8, 6)$ and (5, 10) is
(a) (0, 9)
(b) (0, 3)
(c) (1, 3)
(d) (3, 5)

Sol : www.cbse.site/ma/gm123

24. The distance of the point $P(2, 3)$ from the x-axis is
(a) 2
(b) 3
(c) 1
(d) 5

Sol : www.cbse.site/ma/gm124

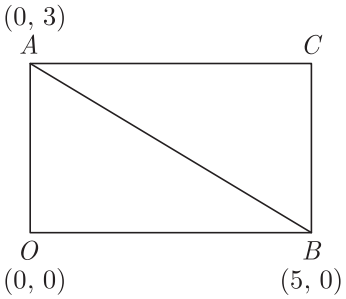
25. The distance between the points $A(0, 6)$ and $B(0, -2)$ is
(a) 6
(b) 8
(c) 4
(d) 2

Sol : www.cbse.site/ma/gm125

26. The distance of the point $P(-6, 8)$ from the origin is
(a) 8
(b) $2\sqrt{7}$
(c) 10
(d) 6

Sol : www.cbse.site/ma/gm126

27. If $AOBC$ is a rectangle whose three vertices are $A(0, 3)$, $O(0, 0)$ and $B(5, 0)$, then the length of its diagonal is



(a) 5
(b) 3
(c) $\sqrt{34}$
(d) 4

Sol : www.cbse.site/ma/gm127

28. The distance between the points (0, 5) and $(-5, 0)$ is
(a) 5
(b) $5\sqrt{2}$
(c) $2\sqrt{5}$
(d) 10

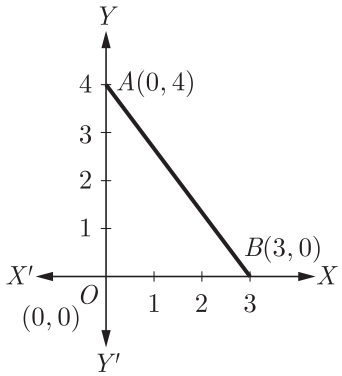
Sol : www.cbse.site/ma/gm128

29. The point which lies on the perpendicular bisector of the line segment joining the points $A(-2, -5)$ and $B(2, 5)$ is
(a) (0, 0)

(b) (0, 2)
(c) (2, 0)
(d) $(-2, 0)$

Sol : www.cbse.site/ma/gm130

30. The perimeter of a triangle with vertices (0, 4), (0, 0) and (3, 0) is



(a) 5
(b) 12
(c) 11
(d) $7+\sqrt{5}$

Sol : www.cbse.site/ma/gm129

31. If the point $P(2,1)$ lies on the line segment joining points $A(4,2)$ and $B(8,4)$, then

(a) $AP = \frac{1}{3}AB$
(b) $AP = PB$
(c) $PB = \frac{1}{3}AB$
(d) $AP = \frac{1}{2}AB$

Sol : www.cbse.site/ma/gm131

32. If $P\left(\frac{a}{3}, 4\right)$ is the mid-point of the line segment joining the points $Q(-6,5)$ and $R(-2,3)$, then the value of a is

(a) -4
(b) -12
(c) 12
(d) -6

Sol : www.cbse.site/ma/gm132

Sol :

33. The perpendicular bisector of the line segment joining the points $A(1,5)$ and $B(4,6)$ cuts the y-axis at

(a) (0, 13)
(b) $(0,-13)$
(c) (0, 12)
(d) (13, 0)

Sol : www.cbse.site/ma/gm133

34. If the distance between the points $(4, p)$ and (1, 0) is 5, then the value of p is

(a) 4 only
(b) ± 4
(c) -4 only
(d) 0

Sol : www.cbse.site/ma/gm134

Sol :

35. **Assertion :** The value of y is 6, for which the distance between the points $P(2,-3)$ and $Q(10, y)$ is 10.

Reason : Distance between two given points $A(x_1, y_1)$ *and* $B(x_2, y_2)$ is given,

$$AB = \sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$$

(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
(c) Assertion (A) is true but reason (R) is false.
(d) Assertion (A) is false but reason (R) is true.

Sol : www.cbse.site/ma/gm135

36. If the point $C(k, 4)$ divides the line segment joining two points $A(2, 6)$ and $B(5,1)$ in ratio 2 : 3, the value of k is ..... .

(a) $\frac{5}{16}$
(b) $\frac{16}{5}$
(c) $\frac{9}{5}$
(d) $\frac{5}{9}$

Sol : www.cbse.site/ma/gm136

37. If points $A(-3,12)$, $B(7,6)$ and $C(x,9)$ are collinear, then the value of x is ..... .

(a) 2

(b) 3
(c) 4
(d) 5

Sol : www.cbse.site/ma/gm137

38. The co-ordinate of the point dividing the line segment joining the points $A(1,3)$ and $B(4,6)$ in the ratio $2:1$ is ..... .
(a) (5, 3)
(b) (3, 5)
(c) (4, 6)
(d) (6, 4)

Sol : www.cbse.site/ma/gm138

39. The distance of a point $P(x,y)$ from the origin is
(a) $\sqrt{x^2-xy+y^2}$
(b) $\sqrt{x^2+xy+y^2}$
(c) $\sqrt{x^2+y^2}$
(d) $\sqrt{x^2+3xy+y^2}$

Sol : www.cbse.site/ma/gm139

40. If the mid-point of the line segment joining the points $A(3,4)$ and $B(k,6)$ is $P(x,y)$ and $x+y-10=0$, the value of k will be
(a) 4
(b) 5
(c) 6
(d) 7

Sol : www.cbse.site/ma/gm140

41. If the point $P(x,y)$ is equidistant from the points $Q(a+b,b-a)$ and $R(a-b,a+b)$ then,
(a) $2ay=xy$
(b) $bx=ay$
(c) $ab=xy$
(d) $by=ax$

Sol : www.cbse.site/ma/gm141

42. The points $(3,0)$, $(6,4)$ and $(-1,3)$ are the vertices of a
(a) equilateral triangle
(b) scalene triangle
(c) isosceles triangle
(d) right angled isosceles triangle

Sol : www.cbse.site/ma/gm142

43. If $A(5,2)$, $B(2,-2)$ and $C(-2,t)$ are the vertices of a right angled triangle with $\angle B=90^\circ$, then the value of t will be
(a) 1
(b) 2
(c) 3
(d) 4

Sol : www.cbse.site/ma/gm143

44. What is the ratio in which the point $P(\frac{3}{4},\frac{5}{12})$ divides the line segment joining the point A $(\frac{1}{2},\frac{3}{2})$ and $(2,-5)$.
(a) 4 : 7
(b) 3 : 7
(c) 1 : 5
(d) 2 : 5

Sol : www.cbse.site/ma/gm144

45. The points $A(4,7)$, $B(p,3)$ and $C(7,3)$ are the vertices of a right triangle, right-angled at B. The value of p will be
(a) 7
(b) 5
(c) 6
(d) 3

Sol : www.cbse.site/ma/gm145

46. The points (a,a), $(-a,-a)$ and $(-\sqrt{3}\,a,\sqrt{3}\,a)$ are the vertices of_____
(a) equilateral triangle
(b) scalene triangle
(c) isosceles triangle
(d) right angled isosceles triangle

Sol : www.cbse.site/ma/gm146

47. If $A(4,3)$, $B(-1,y)$, and $C(3,4)$ are the vertices of a right triangle ABC, right angled at A, then the value of y will be
(a) –8

(b) –6
(c) –2
(d) –4

Sol : www.cbse.site/ma/gm147

48. If the mid-point of the line segment joining $A\left[\frac{x}{2}, \frac{y+1}{2}\right]$ and $B(x+1, y-3)$ is $C(5,-2)$, value of y is
(a) –1
(b) –2
(c) –3
(d) –4

Sol : www.cbse.site/ma/gm148

49. Which of the following the point on the x-axis which is equidistant from the points $(2,-5)$ and $(-2,9)$?
(a) $(-7,0)$
(b) $(7,0)$
(c) $(0,7)$
(d) $(-7,0)$

Sol : www.cbse.site/ma/gm149

50. Points $A(6,4)$, $B(5,-2)$ and $C(7,-2)$ are the vertices of _____
(a) equilateral triangle
(b) scalene triangle
(c) isosceles triangle
(d) right angled isosceles triangle

Sol : www.cbse.site/ma/gm150

51. If $P(2,-1)$, $Q(3,4)$, $R(-2,3)$ and $S(-3,-2)$ be four points in a plane, then $PQRS$ is a _____
(a) rhombus
(b) square
(c) parallelogram
(d) rectangle

Sol : www.cbse.site/ma/gm151

52. If $A(-1,0)$, $B(3,1)$, $C(2,2)$ and $D(-2,1)$ to be four point in plane then $ABCD$ is a _____
(a) rhombus
(b) square
(c) parallelogram
(d) rectangle

Sol : www.cbse.site/ma/gm152

53. If $(3,2)$ and $(-3,2)$ are two vertices of an equilateral triangle which contains the origin, the third vertex will be
(a) $\left(1,\ 2-\sqrt{3}\right)$
(b) $\left(2,\ 1-3\sqrt{3}\right)$
(c) $\left(0,\ 2-3\sqrt{3}\right)$
(d) $\left(1,\ 2-\sqrt{3}\right)$

Sol : www.cbse.site/ma/gm153

54. What is the co-ordinates of the point where the line $2x-3y-5=0$ cuts the x-axis ?
(a) $(0,\ \frac{3}{2})$
(b) $(\frac{3}{2},\ 0)$
(c) $(\frac{5}{2},\ 0)$
(d) $(0,\ \frac{5}{2})$

Sol : www.cbse.site/ma/gm154

55. If the vertices of ΔABC are $A(5,-1), B(-3,-2)$, $C(-1,8)$, the length of median through A will be
(a) $\sqrt{65}$
(b) $\sqrt{55}$
(c) $\sqrt{45}$
(d) $\sqrt{35}$

Sol : www.cbse.site/ma/gm155

56. Select the mid-point of side BC of ΔABC, with $A(1,-4)$ and the mid-points of the sides through A being $(2,-1)$ and $(0,-1)$.
(a) $(2,4)$
(b) $(4,2)$
(c) $(2,1)$
(d) $(1,2)$

Sol : www.cbse.site/ma/gm156

57. A line intersects the y-axis and x-axis at the points P and Q respectively. If $(2,-5)$ is the mid-point of PQ, then the coordinates of P and Q will be
(a) $(0,-10)$ and $(4,0)$
(b) $(4,0)$ and $(10,0)$

(c) $(12,0)$ and $(-4,0)$
(d) $(0,12)$ and $(-4,0)$

Sol : www.cbse.site/ma/gm157

58. If two adjacent vertices of a parallelogram are $(3,2)$ and $(-1,0)$ and the diagonals intersect at $(2,-5)$ then find the co-ordinates of the other two vertices.
(a) $(-14,4)$ and $D(-10,\ 5)$
(b) $(4,-14)$ and $D(5,-10)$
(c) $(1,-12)$ and $D(5,-10)$
(d) $(-12,1)$ and $D(-10,\ 5)$

Sol : www.cbse.site/ma/gm158

59. In what ratio does the point $P(-4,6)$ divides the line segment joining the points $A(-6,10)$ and $B(3,-8)$?
(a) 7 : 8
(b) 7 : 2
(c) 2 : 8
(d) 2 : 7

Sol : www.cbse.site/ma/gm159

60. If the line segment joining the points $A(2,1)$ and $B(5,-8)$ is trisected at the points P and Q, the coordinates P will be
(a) $(-2,3)$
(b) $(3,-2)$
(c) $(6,3)$
(d) $(-3,6)$

Sol : www.cbse.site/ma/gm160

61. If the co-ordinates of points A and B are $(-2,-2)$ and $(2,-4)$ respectively, what are the co-ordinates of P such that $AP=\frac{3}{7}AB$, where P lies on the line segment AB ?
(a) $\left(\frac{-2}{7},\frac{-20}{7}\right)$
(b) $\left(\frac{2}{7},\frac{20}{7}\right)$
(c) $\left(\frac{-20}{7},\frac{-2}{7}\right)$
(d) $\left(\frac{20}{7},\frac{2}{7}\right)$

Sol : www.cbse.site/ma/gm161

62. What is the value of a so that $(3,a)$ lies on the line represented by $2x-3y-5=0$?
(a) $\frac{5}{2}$
(b) $\frac{1}{3}$
(c) $\frac{3}{2}$
(d) $\frac{1}{3}$

Sol : www.cbse.site/ma/gm162

63. What are the co-ordinate of a point P on the line segment joining $A(1,2)$ and $B(6,7)$ such that $AP=\frac{2}{5}AB$?
(a) $(3,4)$
(b) $(4,3)$
(c) $(5,4)$
(d) $(4,5)$

Sol : www.cbse.site/ma/gm163

64. If the distance of $P(x,y)$ from $A(6,2)$ and $B(-2,6)$ are equal, then
(a) $x=2y$
(b) $y=2x$
(c) $y=3x$
(d) $x=3y$

Sol : www.cbse.site/ma/gm164

65. The co-ordinates of the vertices of ΔABC are $A(7,2)$, $B(9,10)$ and $C(1,4)$. If E and F are the mid-points of AB and AC respectively, then,
(a) $EF=\frac{1}{3}BC$
(b) $EF=\frac{1}{2}BC$
(c) $EF=BC$
(d) $EF=2BC$

Sol : www.cbse.site/ma/gm165

66. The diagonals of $ABCD$, with vertices $A(2,\ -1), B(5,\ -1), C(5,\ 6)$ and $D(2,6)$ are ____ equal and bisect each other.
(a) equal, doest bisect
(b) equal, bisect
(c) not equal, bisect
(d) not equal, not bisect

Sol : www.cbse.site/ma/gm166

67. What is the ratio in which $(11,15)$ divides the line segment joining the points $(15,5)$ and $(9,20)$.
(a) 1 : 3

(b) 2 : 3
(c) 2 : 1
(d) 1 : 2

Sol : www.cbse.site/ma/gm167

68. Which of the following point on y-axis is equidistant from the points $(5,-2)$ and $(-3,2)$?
(a) $(0,3)$
(b) $(0,2)$
(c) $(0,-3)$
(d) $(0,-2)$

Sol : www.cbse.site/ma/gm168

69. The point $(-3,p)$ divides the line segment joining the points $(-5,-4)$ and $(-2,3)$. The value of p is
(a) $\frac{2}{3}$
(b) $\frac{1}{3}$
(c) $\frac{5}{6}$
(d) $\frac{6}{5}$

Sol : www.cbse.site/ma/gm169

70. What is the ratio in which the point $p(m,6)$ divides the line segment joining the points $A(-4,3)$ and $B(2,8)$.
(a) 2 : 3
(b) 3 : 2
(c) 3 : 1
(d) 1 : 3

Sol : www.cbse.site/ma/gm170

71. What is the value of m in previous question ?
(a) $\frac{2}{3}$
(b) $\frac{1}{3}$
(c) $-\frac{2}{5}$
(d) $-\frac{6}{5}$

Sol : www.cbse.site/ma/gm170

72. vertices of a parallelogram $ABCD$, the value of y will be
(a) 3
(b) 4
(c) 5
(d) 6

Sol : www.cbse.site/ma/gm171

73. What are the co-ordinates of the points of trisection of the line segment joining the points $A(1,-2)$ and $B(-3,4)$?
(a) $\left(2,\frac{-5}{2}\right)$
(b) $\left(\frac{-5}{2},2\right)$
(c) $\left(2,\frac{5}{2}\right)$
(d) $\left(\frac{5}{2},2\right)$

Sol : www.cbse.site/ma/gm172

74. If (a,b) is the mid-point of the segment joining the points $A(10,-6)$ and $B(k,4)$ and $a-2b=18$, the value of k will be
(a) 28
(b) 20
(c) 24
(d) 22

Sol : www.cbse.site/ma/gm173

75. What is the distance AB in previous question ?
(a) $51\sqrt{2}$
(b) $2\sqrt{61}$
(c) $61\sqrt{2}$
(d) $2\sqrt{51}$

Sol : www.cbse.site/ma/gm173

76. What is the ratio in which the line $2x+3y-5=0$ divides the line segment joining the points $(8,-9)$ and $(2,1)$?
(a) 8 : 1
(b) 7 : 6
(c) 7 : 2
(d) 2 : 5

Sol : www.cbse.site/ma/gm174

77. In previous question what are co-ordinates of the point of division?
(a) $\left(-\frac{4}{9},\frac{8}{3}\right)$
(b) $\left(\frac{8}{3},-\frac{4}{9}\right)$
(c) $\left(\frac{8}{3},-\frac{1}{9}\right)$

(d) $\left(-\frac{1}{9}, \frac{8}{3}\right)$

Sol : www.cbse.site/ma/gm174

78. What is the ratio in which the line joining points $(a+b, b+a)$ and $(a-b, b-a)$ is divided by the point (a, b)?

(a) 1 : 1

(b) 2 : 1

(c) 2 : 3

(d) 1 : 3

Sol : www.cbse.site/ma/gm175

79. In what ratio does the point $\left(\frac{24}{11}, y\right)$ divides the line segment joining the points $P(2,-2)$ and $Q(3,7)$? Also find the value of y.

(a) 2 : 9

(b) 2 : 7

(c) 7 : 5

(d) 6 : 5

Sol : www.cbse.site/ma/gm176

80. In previous question what is the value of y?

(a) $\frac{6}{5}$

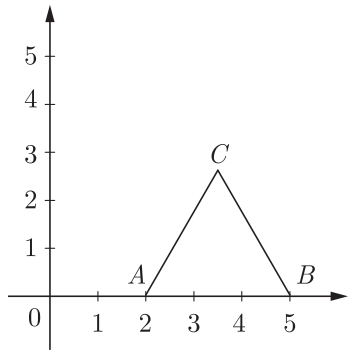
(b) $\frac{11}{4}$

(c) $-\frac{4}{11}$

(d) $-\frac{6}{5}$

Sol : www.cbse.site/ma/gm176

81. In the given figure ΔABC is an equilateral triangle of side 3 units. The co-ordinates of the point C will be



(a) $\left(\frac{7}{2}, \frac{3}{2}\sqrt{3}\right)$

(b) $\left(\frac{5}{2}, \frac{3}{2}\sqrt{3}\right)$

(c) $\left(\frac{5}{2}, \frac{1}{2}\sqrt{3}\right)$

(d) $\left(\frac{7}{2}, \frac{1}{2}\sqrt{3}\right)$

Sol : www.cbse.site/ma/gm177

82. What are the co-ordinates of the points of trisection of the line segment joining the points $(3,-2)$ and $(-3,-4)$.

(a) $(1,-\frac{8}{3})$ and $(-1,-\frac{10}{3})$

(b) $(-\frac{8}{3}, 1,)$ and $(-1,-\frac{10}{3})$

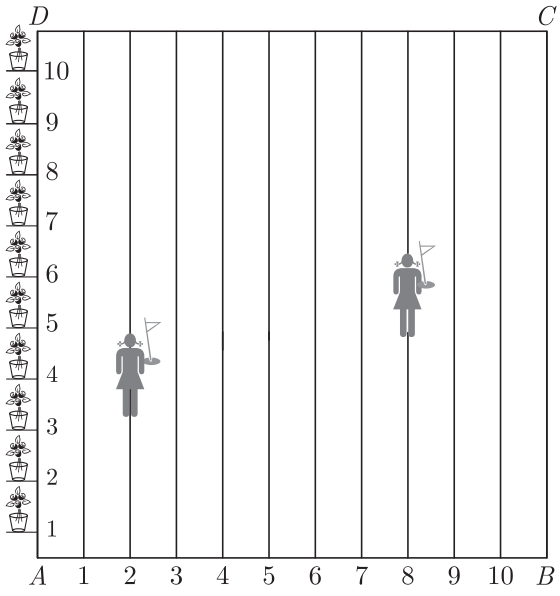
(c) $(-\frac{8}{3}, 1,)$ and $(-\frac{10}{3}, -1)$

(d) $(1,-\frac{8}{3})$ and $(-\frac{10}{3}, -1)$

Sol : www.cbse.site/ma/gm178

Direction For Question : (84-85)

To conduct Sports Day activities, in your rectangular school ground $ABCD$, lines have been drawn with chalk powder at a distance of 1 m each. 100 flower pots have been placed at a distance of 1 m from each other along AD, as shown in Figure. Niharika runs ¼th the distance AD on the 2nd line and posts a green flag. Preet runs $\frac{1}{5}$th distance AD on the eighth line and posts a red flag.



83. What is the distance between the two flags?

(a) $\sqrt{61}$ m

(b) $\sqrt{125}$ m

(c) $\sqrt{42}$ m

(d) $\sqrt{142}$ m

Sol : www.cbse.site/ma/gm180

84. If Rashmi has to post a blue flag exactly half way between the line segment joining the two flags, where should she post the blue flag?

(a) in the fifth line, at a distance of $\frac{45}{2}$ i.e., 22.5 m along the direction parallel to AD

(b) in the fourth line, at a distance of $\frac{45}{2}$ i.e., 22.5 m along the direction parallel to AD

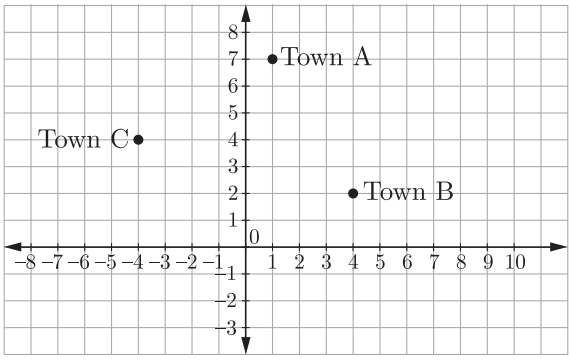
(c) in the fourth line, at a distance of 45 m along the direction parallel to AD

(d) in the fifth line, at a distance of 45 m along the direction parallel to AD

Sol : www.cbse.site/ma/gm180

Direction For Question : (86-87)

Two friends Seema and Aditya work in the same office at Delhi. In the Christmas vacations, both decided to go to their hometown represented by Town A and Town B respectively in the figure given below. Town A and Town B are connected by trains from the same station C (in the given figure) in Delhi. Based on the given situation answer the following questions:



85. Who will travel more distance, Seema or Aditya, to reach to their hometown?

(a) Distance travelled by Aditya is $\sqrt{68}$ units and Aditya travels more distance.

(a) Distance travelled by Seema is $\sqrt{68}$ units and Seema travels more distance.

(a) Distance travelled by Seema is $\sqrt{78}$ units and Seema travels more distance.

(a) Distance travelled by Aditya is $\sqrt{78}$ units and Aditya travels more distance.

Sol : www.cbse.site/ma/gm181

86. Seema and Aditya planned to meet at a location D situated at a point D represented by the mid-point of the line joining the points represented by Town A and Town B. What are the coordinates of the point represented by the point D ?

(a) $\left(\frac{9}{4}, \frac{9}{2}\right)$

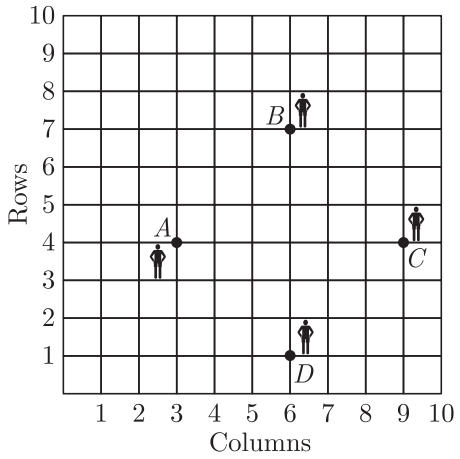
(b) $\left(\frac{5}{4}, \frac{9}{4}\right)$

(c) $\left(\frac{5}{2}, \frac{9}{2}\right)$

(d) $\left(\frac{9}{2}, \frac{5}{2}\right)$

Sol : www.cbse.site/ma/gm181

87. In a classroom, 4 friends are seated at the points A , B, C, and D as shown in Figure. Champa and Chameli walk into the class and after observing for a few minutes Champa asks Chameli, Don't you think $ABCD$ is a rhombus ? Chameli disagrees. Why Chameli disagree ?



(a) because this is square

(b) because this is rectangle

(c) because this is parallelogram

(d) because this is quadrilateral

Sol : www.cbse.site/ma/gm182

88. What is the ratio in which the line $x-3y=0$ divides the line segment joining the points $(-2,-5)$ and $(6,3)$. .

(a) 13 : 3

(b) 13 : 7

(c) 7 : 3

(d) 7 : 6

Sol : www.cbse.site/ma/gm183

89. In previous question what are the coordinates of the point of intersection ?
(a) $\left(\frac{9}{4}, \frac{9}{2}\right)$
(b) $\left(\frac{5}{4}, \frac{3}{4}\right)$
(c) $\left(\frac{5}{2}, \frac{9}{2}\right)$
(d) $\left(\frac{9}{2}, \frac{3}{2}\right)$

Sol : www.cbse.site/ma/gm183

90. Point A lies on the line segment XY joining $X(6,-6)$ and $Y(-4,-1)$ in such a way that $\frac{XA}{XY}=\frac{2}{5}$. If point A also lies on the line $3x+k(y+1)=0$, the value of k is
(a) 2
(b) 3
(c) 4
(d) 5

Sol : www.cbse.site/ma/gm184

91. What is the ratio in which the y-axis divides the line segment joining the points $(-1,-4)$ and $(5,-6)$?
(a) 1 : 2
(b) 1 : 3
(c) 1 : 5
(d) 1 : 4

Sol : www.cbse.site/ma/gm185

92. In previous question, what are the coordinates of the point of intersection?
(a) $\left(0, -\frac{4}{9}\right)$
(b) $\left(0, -\frac{13}{3}\right)$
(c) $\left(0, -\frac{1}{9}\right)$
(d) $\left(-\frac{1}{9}, \frac{8}{3}\right)$

Sol : www.cbse.site/ma/gm185

93. If $A(-2,1)$, $B(a,0)$, $C(4,b)$ and $D(1,2)$ are the vertices of a parallelogram $ABCD$, the values of a and b are
(a) 1, 1
(b) 1, 3
(c) 3, 2
(d) 2, 4

Sol : www.cbse.site/ma/gm186

94. In previous question, the lengths of its sides will be
(a) $\sqrt{10}$, $\sqrt{10}$
(b) $2\sqrt{12}$, $\sqrt{12}$
(c) $2\sqrt{12}$, $2\sqrt{12}$
(d) $\sqrt{12}$, $\sqrt{12}$

Sol : www.cbse.site/ma/gm186

95. If $P(9a-2,-b)$ divides the line segment joining $A(3a+1,-3)$ and $B(8a,5)$ in the ratio 3:1, the values of a and b are
(a) 1, –3
(b) 1, 2
(c) 2, 3
(d) 3, 4

Sol : www.cbse.site/ma/gm187

96. Two point divide the line segment joining $A(2,-3)$ and $B(-4,-6)$ into three equal parts. The coordinates of points are
(a) $(3,4)$ and $(2,-5)$
(b) $(0,-4)$ and $(-2,-5)$
(c) $(0,-3)$ and $(-2,5)$
(d) $(4,3)$ and $(2,\ 5)$

Sol : www.cbse.site/ma/gm188

97. The base BC of an equilateral triangle ABC lies on y-axis. The co-ordinates of point C are $(0,3)$. The origin is the mid-point of the base. What are the co-. Also find the co-ordinates of another point D such that $BACD$ is a rhombus.
(a) $(\sqrt{3},0)$
(b) $(2\sqrt{3},0)$
(c) $(3\sqrt{3},0)$
(d) $(4\sqrt{3},0)$

Sol : www.cbse.site/ma/gm189

98. In previous question what are the co-ordinates of another point D such that $BACD$ is a rhombus ?
(a) $(\sqrt{3},0)$
(b) $-(2\sqrt{3},0)$
(c) $(-3\sqrt{3},0)$
(d) $(4\sqrt{3},0)$

Sol : www.cbse.site/ma/gm189

99. The base QR of an equilateral triangle PQR lies on x-axis. The co-ordinates of point Q are $(-4,0)$ and the origin is the mid-point of the base. The co-ordinates of the point P will be

(a) $(0,3\sqrt{3})$

(b) $(0,\sqrt{3})$

(c) $(0,2\sqrt{3})$

(d) $(0,4\sqrt{3})$

Sol : www.cbse.site/ma/gm190

100. The vertices of quadrilateral $ABCD$ are $A(5,-1)$, $B(8,3)$, $C(4,0)$ and $D(1,-4)$. Shape $ABCD$ is a___

(a) square

(b) rectangle

(c) rhombus

(d) parallelogram

Sol : www.cbse.site/ma/gm191

101. The co-ordinates of vertices of ΔABC are $A(0,0)$, $B(0,2)$ and $C(2,0)$. The triangle ΔABC is ____ traingle.

(a) isosceles

(b) equilateral

(c) isosceles right

(d) scalene

Sol : www.cbse.site/ma/gm192

102. What is the ratio is which the line segment joining the points $A(3,-3)$ and $B(-2,7)$ is divided by x-axis.

(a) 3 : 7

(b) 4 : 7

(c) 5 : 6

(d) 4 : 6

Sol : www.cbse.site/ma/gm193

103. In previous question what are the co-ordinates of the point of division ?

(a) $\left(\frac{5}{2},\ 0\right)$

(b) $\left(\frac{5}{4},\ 0\right)$

(c) $\left(\frac{5}{2},\ 0\right)$

(d) $\left(\frac{3}{2},\ 0\right)$

Sol : www.cbse.site/ma/gm193

104. What is the ratio in which the straight line $x-y-2=0$ divides the line segment joining $(3,-1)$ and $(8,9)$?

(a) 5 : 6

(b) 4 : 5

(c) 3 : 4

(d) 2 : 3

Sol : www.cbse.site/ma/gm194

105. The line segment joining the points $A(3,2)$ and $B(5,1)$ is divided at the point P in the ratio 1:2 and P lies on the line $3x-18y+k=0$. The value of k will be

(a) 21

(b) 20

(c) 19

(d) 22

Sol : www.cbse.site/ma/gm195

106. If $R(x,y)$ is a point on the line segment joining the points $P(a,b)$ and $Q(b,a)$, then which of the following is correct ?

(a) $x+y=\sqrt{ab}$

(b) $x+y=a+b$

(c) $x+a=y+b$

(d) $x+b=y+a$

Sol : www.cbse.site/ma/gm196

107. In what ratio does $(-4,6)$ divides the line segment joining the point $A(-6,4)$ and $B(3,-8)$

(a) 2 : 7

(b) 6 : 7

(c) 5 : 3

(d) 2 : 5

Sol : www.cbse.site/ma/gm197

108. Point $(1,-1)$,$(0,4)$ and $(-5,3)$ are vertices of a triangle. This triangle is a _____triangle.

(a) isosceles

(b) equilateral

(c) isosceles right

(d) scalene

Sol : www.cbse.site/ma/gm198

109. In previous question what is the length of its median joining the vertex $(1,-1)$ the mid-point of the opposite side ?

(a) $\frac{\sqrt{110}}{4}$

(b) $\frac{\sqrt{130}}{4}$

(c) $\frac{\sqrt{130}}{2}$

(d) $\frac{\sqrt{110}}{2}$

Sol : www.cbse.site/ma/gm198

110. Point $(-1,y)$ and $B(5,7)$ lie on a circle with centre $O(2,-3y)$. What is the radius of the circle?

(a) 5

(b) 2

(c) 3

(d) 4

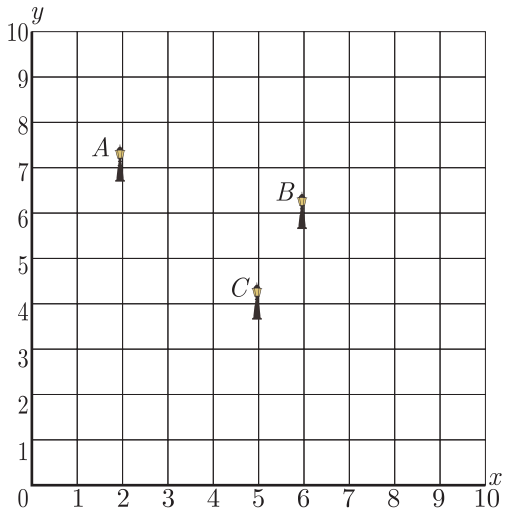
Sol : www.cbse.site/ma/gm199

COMPETENCEY BASED QUESTIONS

Direction For Question : (112-116)

Resident Welfare Association (RWA) of a Gulmohar Society in Delhi have installed three electric poles A, B and C in a society's common park. Despite these three poles, some parts of the park are still in dark. So, RWA decides to have one more electric pole D in the park.

The park can be modelled as a coordinate systems given below.



On the basis of the above information, answer any four of the following questions:

111. What is the position of the pole C?

(a) (4 ,5)

(b) (5, 4)

(c) (6, 5)

(d) (5, 6)

Sol : www.cbse.site/ma/gm200

112. What is the distance of the pole B from the corner O of the park ?

(a) $6\sqrt{2}$ units

(b) $3\sqrt{2}$ units

(c) $6\sqrt{3}$ units

(d) $3\sqrt{3}$ units

Sol : www.cbse.site/ma/gm200

113. Find the position of the fourth pole D so that four points A, B C and D form a parallelogram .

(a) (5, 2)

(b) (1, 5)

(c) (1, 4)

(d) (2, 5)

Sol : www.cbse.site/ma/gm200

114. What is the distance between poles A and C ?

(a) $6\sqrt{2}$ units

(b) $3\sqrt{2}$ units

(c) $6\sqrt{3}$ units

(d) $3\sqrt{3}$ units

Sol : www.cbse.site/ma/gm200

115. What is the distance between poles B and D?

(a) $2\sqrt{3}$ units

(b) $\sqrt{28}$ units

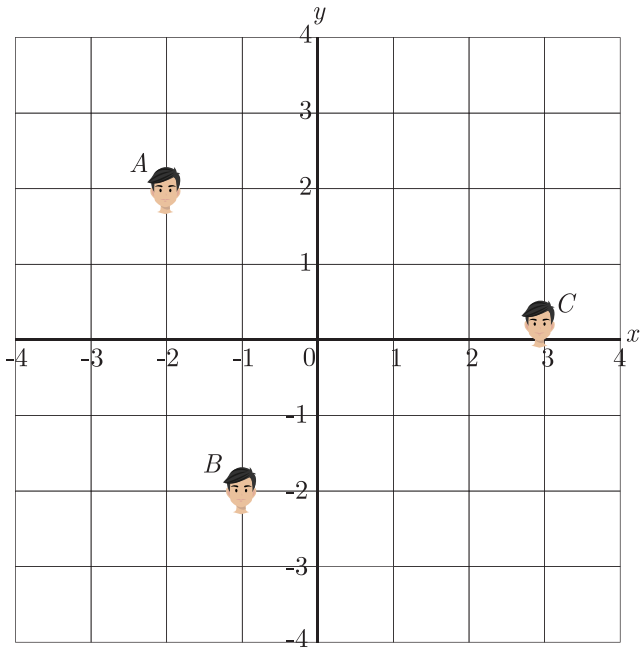
(c) $6\sqrt{3}$ units

(d) $\sqrt{26}$ units

Sol : www.cbse.site/ma/gm200

Direction For Question : (117-121)

Ajay, Bhigu and Colin are fast friend since childhood. They always want to sit in a row in the classroom . But teacher doesn't allow them and rotate the seats row-wise everyday. Bhigu is very good in maths and he does distance calculation everyday. He consider the centre of class as origin and marks their position on a paper in a co-ordinate system. One day Bhigu make the following diagram of their seating position.



116. What are the coordinates of point A?

(a) $(2, 2)$

(b) $(2, -2)$

(c) $(-2, 2)$

(d) $(-2, -2)$

Sol : www.cbse.site/ma/gm201

117. What is the distance of point A from origin ?

(a) 8

(b) $2\sqrt{2}$

(c) 4

(d) $4\sqrt{2}$

Sol : www.cbse.site/ma/gm201

118. What is the distance between A and B ?

(a) $3\sqrt{19}$

(b) $3\sqrt{5}$

(c) $\sqrt{17}$

(d) $2\sqrt{5}$

Sol : www.cbse.site/ma/gm201

119. What is the distance between B and C ?

(a) $3\sqrt{19}$

(b) $3\sqrt{5}$

(c) $2\sqrt{17}$

(d) $2\sqrt{5}$

Sol : www.cbse.site/ma/gm201

120. A point D lies on the line segment between points A and B such that $AD : DB = 4 : 3$. What are the the coordinates of point D ?

(a) $\left(\frac{10}{7}, \frac{2}{7}\right)$

(b) $\left(\frac{2}{7}, \frac{7}{7}\right)$

(c) $\left(-\frac{10}{7}, -\frac{2}{7}\right)$

(d) $\left(-\frac{2}{7}, -\frac{7}{7}\right)$

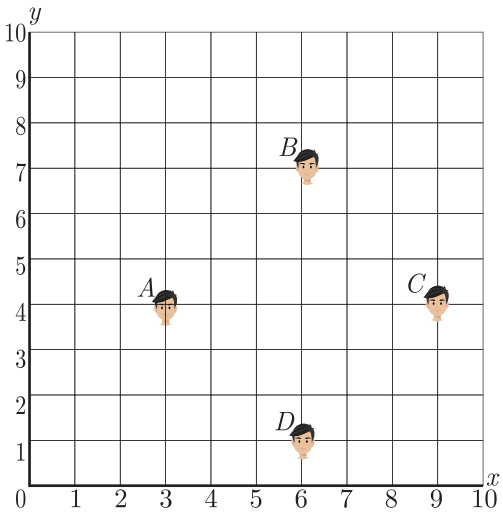
Sol : www.cbse.site/ma/gm201

Direction For Question : (122-125)

Morning assembly is an integral part of the school's schedule. Almost all the schools conduct morning assemblies which include prayers, information of latest happenings, inspiring thoughts, speech, national anthem, etc. A good school is always particular about their morning assembly schedule. Morning assembly is important for a child's development. It is essential to understand that morning assembly is not just about standing in long queues and singing prayers or national anthem, but it's something beyond just prayers. All the activities carried out in morning assembly by the school staff and students

have a great influence in every point of life. The positive effects of attending school assemblies can be felt throughout life.

Have you noticed that in school assembly you always stand in row and column and this make a coordinate system. Suppose a school have 100 students and they all assemble in prayer in 10 rows as given below.



Here A, B, C and D are four friend Amar, Bharat, Colin and Dravid.

121. What is the distance between A and B ?
(a) 8
(b) 6
(c) $3\sqrt{3}$
(d) $2\sqrt{3}$

Sol : www.cbse.site/ma/gm202

122. What is the distance between C and D ?
(a) 8
(b) 6
(c) $3\sqrt{3}$
(d) $2\sqrt{3}$

Sol : www.cbse.site/ma/gm202

123. What is the distance between A and C ?
(a) 8
(b) 6
(c) $3\sqrt{3}$
(d) $2\sqrt{3}$

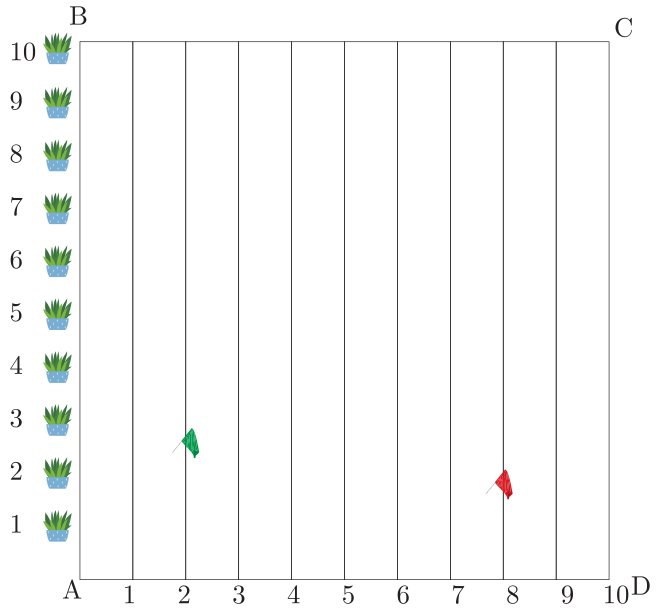
Sol : www.cbse.site/ma/gm202

124. What is the distance between D and B ?
(a) 8
(b) 6
(c) $3\sqrt{3}$
(d) $2\sqrt{3}$

Sol : www.cbse.site/ma/gm202

Direction For Question : (126-130)

To conduct sports day activities, in a rectangular shaped school ground $ABCD$, lines have been drawn with chalk powder at a distance of 1 m each. 100 flower pots have been placed at a distance of 1 m from each other along AB, as shown in figure. Nishtha runs $\frac{1}{4}$th the distance AB on the 2nd line and posts a green flag. Suman runs $\frac{1}{5}$th the distance AB on the 8th line and posts a red flag.



125. What is the position of green flag ?
(a) (2, 25)
(b) (25, 4)
(c) (25, 2)
(d) (4, 25)

Sol : www.cbse.site/ma/gm203

126. What is the position of red flag ?
(a) (20, 4)
(b) (8, 20)
(c) (20, 8)
(d) (4, 20)

Sol : www.cbse.site/ma/gm203

127. What is the distance between both the flags?
(a) $\sqrt{51}$
(b) $3\sqrt{3}$
(c) $\sqrt{61}$
(d) $2\sqrt{3}$

Sol : www.cbse.site/ma/gm203

128. What is the distance of red flag from point A ?
(a) $4\sqrt{29}$
(b) $2\sqrt{29}$
(c) $8\sqrt{15}$
(d) $16\sqrt{3}$

Sol : www.cbse.site/ma/gm203

129. If Rakhi has to post a blue flag exactly halfway between the line segment joining the two flags, where should she post her flag?
(a) (20, 4)
(b) (22.5, 5)
(c) (4, 20)
(d) (5, 22.5)

Sol : www.cbse.site/ma/gm203

130. The Brihanmumbai Electricity Supply and Transport (BEST) is a civic transport and electricity provider public body based in Mumbai. BEST operates one of India's largest fleets of buses. The bus transport service covers the entire city and also extends its operations outside city limits into neighbouring urban areas. In addition to buses, it also operates a ferry service in the northern reaches of the city.

There are two routes to travel from source A to destination B by using BEST bus service. First bus reaches at B via point C and second bus reaches from A to B directly. If coordinates of A, B and C are $(-2,-3)$, $(2,3)$ and $(3,2)$ respectively, then by which bus do you want to travel from A to B using BEST services. (Assume that both buses have same speed).

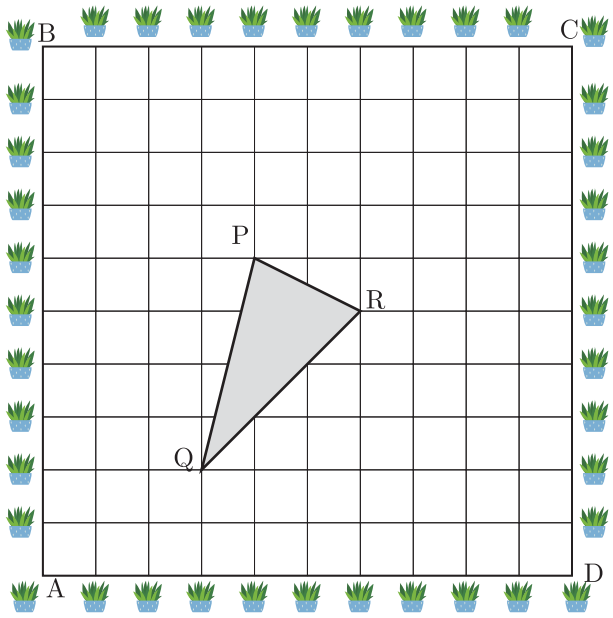
Sol :

(a) by second bus because distance travel by it is $2\sqrt{13}$ which is lesser than distance travel by first bus.
(b) by second bus because distance travel by it is $6\sqrt{2}$ which is lesser than distance travel by first bus.
(c) by first bus because distance travel by it is $6\sqrt{2}$ which is lesser than distance travel by second bus.
(d) by first bus because distance travel by it is $2\sqrt{13}$ which is lesser than distance travel by second bus.

Sol : www.cbse.site/ma/gm204

Direction For Question : (132-136)

A garden is in the shape of rectangle. Gardener grew sapling of Ashoka tree on the boundary of garden at the distance of 1 meter from each other. He want to decorate the garden with rose plants. He choose triangular region inside the park to grow rose plants. On the above situation, gardener took help from the students of class 10th. They made a chart for it which looks as the above figure.



131. If A is taken as origin, what are the coordinates of triangle PQR ?

(a) $P(4,6), Q(3,2), R(6,5)$

(b) $P(6,4), Q(2,3), R(5,6)$

(c) $P(5,7), Q(3,3), R(5,5)$

(d) $P(6,6), Q(2,3), R(6,6)$

Sol : www.cbse.site/ma/gm205

132. If C is taken as origin, what is the co-ordinate of point P ?

(a) $(-12, 2)$

(b) $(12, 2)$

(c) $(6, -4)$

(d) $(-6, -4)$

Sol : www.cbse.site/ma/gm205

133. If B is taken as origin, what are the co-ordinate of P ?

(a) $(4, 4)$

(b) $(-4, 4)$

(c) $(4, -4)$

(d) $(-4, -4)$

Sol : www.cbse.site/ma/gm205

134. What is distance between P and Q if origin is taken A?

(a) $\sqrt{71}$

(b) $\sqrt{17}$

(c) $\sqrt{65}$

(d) $\sqrt{50}$

Sol : www.cbse.site/ma/gm205

135. What is distance between P and Q if origin is taken B?

(a) $\sqrt{50}$

(b) $\sqrt{71}$

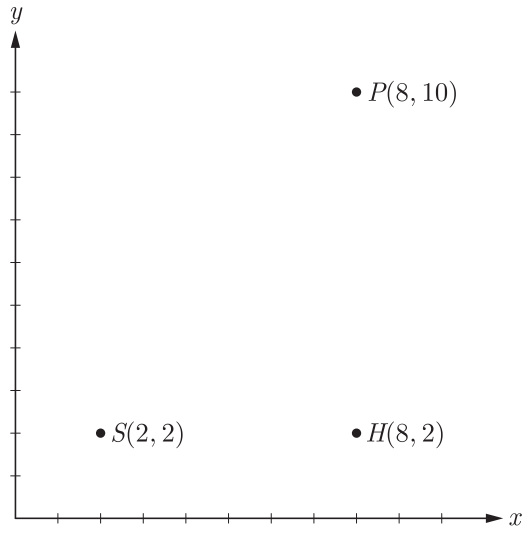
(c) $\sqrt{17}$

(d) $\sqrt{61}$

Sol : www.cbse.site/ma/gm205

136. Old Age Home : An old age homes is a place where old people live and are cared for when they are too old to look after themselves. With advancing age, people often lose motor functions. Performing day to day activities becomes a daunting task. In an old age home, the association helps with daily activities. One of the factors that make old age homes attractive to elders is the companionship. The steady security in an old age home gives them protection from intruders and helps them live a safe and secure life.

A school decides to take the students for school picnic to an amusement park. However, the students have to first visit an old age home and then move towards the park. If the point S, P and H represent the school, the park and the old age home respectively, find the additional distance covered by the students had they travelled directly from school to the park? (Note : All distance are in km)



(a) 2 km
(b) 4 km
(c) 6 km
(d) 8 km

Sol : www.cbse.site/ma/gm206

Direction For Question : (138-142)

Satellite Images : Satellite images are images of Earth collected by imaging satellites operated by governments and businesses around the world. Satellite imaging companies sell images by licensing them to governments and businesses such as Apple Maps and Google Maps. It should not be confused for astronomy images collected by space telescope.

Barun lives in Jaipur in Vaishali. Satellite image of his colony is shown in given figure. In this view, his house is pointed out by a flag, which is situated at the point of intersection of x and y- axes. If he goes 2 cm east and 3 cm north from the house, then he reaches to a grocery store, If he goes 4 cm west and 6 cm south from the house, then he reaches to his office. If he goes 6 cm east and 8 cm south from the house, then he reaches to a food court. If he goes 6 cm west and 8 cm north from the house, he reaches to a his kid's school.

Based on the above information, answer the following questions.

137. What is the distance between grocery store and food court?
(a) $\sqrt{137}$ cm
(b) $\sqrt{129}$ cm
(c) $8\sqrt{15}$ cm
(d) $16\sqrt{3}$ cm

Sol : www.cbse.site/ma/gm207

138. What is the distance of the school from the house?
(a) 10 cm
(b) 15 cm
(c) 20 cm
(d) 25 cm

Sol : www.cbse.site/ma/gm207

139. If the grocery store and office lie on a line, what is the ratio of distance of house from grocery store to that from office ?
(a) 2 :1
(b) 3 : 1
(c) 4 : 1
(d) 5 : 1

Sol : www.cbse.site/ma/gm207

140. What is the ratio of distances of house from school to food court.
(a) 1 :1
(b) 2 : 1
(c) 3 : 1
(d) 4 : 1

Sol : www.cbse.site/ma/gm207

141. What shape is formed by the coordinates of positions of school, grocery store, food court and office?
(a) square

(b) rectangle
(c) rhombus
(d) quadrilateral

Sol : www.cbse.site/ma/gm207

Direction For Question : (143-146)

Birla Science Museum is the first Science and Technology Museum of the country, established in 1954. It houses exhibits and displays on science and technology where visitors can interact with the exhibits to make the understanding of science and technology easy and entertaining.

Birla Science Museum has set aside a children's room having planets and stars painted on the ceiling. Suppose an imaginary coordinate system is placed on the ceiling in the room with the centre of the ceiling at (0, 0,). Three particular stars are located at $S(-10,5)$, $T(3,-8)$ and $R(-7,-4)$, where the coordinates represent the distance in feet from the center of the room.

142. What is the distance between $S(-10,5)$ and $T(3,-8)$?
(a) $4\sqrt{29}$
(b) $2\sqrt{29}$
(c) $13\sqrt{2}$
(d) $16\sqrt{3}$

Sol : www.cbse.site/ma/gm208

143. What is the distance between $R(-7,-4)$ and $T(3,-8)$?
(a) $4\sqrt{29}$
(b) $2\sqrt{29}$
(c) $8\sqrt{15}$
(d) $16\sqrt{3}$

Sol : www.cbse.site/ma/gm208

144. What is the distance between $S(-10,5)$ and $R(-7,-4)$?
(a) $4\sqrt{15}$
(b) $3\sqrt{10}$
(c) $8\sqrt{15}$
(d) $16\sqrt{3}$

Sol : www.cbse.site/ma/gm208

145. Which star is farthest from the center of the room?
(a) $S(-10,5)$
(b) $T(3,-8)$
(c) $R(-7,-4)$
(d) All are at same distance

Sol : www.cbse.site/ma/gm208

SELF TEST QUESTIONS

146. What is the coordinates of a point P on x-axis which is equidistant from the points $A(-2,0)$ and $B(6,0)$.
(a) (1, 0)
(b) (2, 0)
(c) (3, 0)
(d) (4, 0)

Sol : www.cbse.site/ma/gm247

147. Select the coordinates of a point A, where AB is diameter of a circle whose centre is $(2,-3)$ and B is the point $(1,4)$.
(a) $(-10,3)$
(b) $(3,-10)$
(c) $(-3,10)$
(d) $(3,10)$

Sol : www.cbse.site/ma/gm248

148. Select the value of a, for which point $P(\frac{a}{3},2)$ is the midpoint of the line segment joining the Points $Q(-5,4)$ and $R(-1,0)$.
(a) –9
(b) 9
(c) 8
(d) –8

Sol : www.cbse.site/ma/gm249

149. The ordinate of a point A on y-axis is 5 and B has co-ordinates $(-3,1)$. The length of AB will be
(a) 4
(b) 5
(c) 6
(d) 7

Sol : www.cbse.site/ma/gm250

150. The perpendicular distance of $A(5,12)$ from the y-axis will be
(a) 6
(b) 3
(c) 4
(d) 5

Sol : www.cbse.site/ma/gm251

151. If the centre and radius of circle is $(3,4)$ and 7 units respectively,, then what it the position of the point $A(5,8)$ with respect to circle?
(a) inside
(b) outside
(c) on circle
(d) can't say

Sol : www.cbse.site/ma/gm252

152. Select the perimeter of a triangle with vertices $(0,4)$, $(0,0)$ and $(3,0)$.
(a) 16
(b) 4
(c) 8
(d) 12

Sol : www.cbse.site/ma/gm253

153. Locate a point Q on line segment AB such that $BQ=\frac{5}{7}\times AB$. What is the ratio of line segment in which AB is divided?
(a) 2 : 5
(b) 6 : 7
(c) 2 : 7
(d) 7 : 2

Sol : www.cbse.site/ma/gm254

154. What is the distance of the point $(-4,-7)$ from the y-axis ?
(a) 6
(b) 4
(c) 8
(d) 2

Sol : www.cbse.site/ma/gm255

155. If the distance between the points $(4,k)$ and $(1,0)$ is 5, then what can be the possible values of k ?
(a) 4
(b) 6
(c) 2
(d) 8

Sol : www.cbse.site/ma/gm256

156. Select the coordinates of the point on y-axis which is nearest to the point $(-2,5)$.
(a) $(0,2)$
(b) $(0,5)$
(c) $(0,4)$
(d) $(0,-2)$

Sol : www.cbse.site/ma/gm257

157. In what ratio does the x-axis divide the line segment joining the points $(-4,-6)$ and $(-1,7)$?
(a) 6 : 7
(b) 6 : 5
(c) 5 : 6
(d) 5 : 7

Sol : www.cbse.site/ma/gm258

158. AB is diameter of the circle whose centre is $(2,-3)$ and B is the point $(3,4)$. The coordinates of a point A will be
(a) $(10,-1)$
(b) $(-1,10)$
(c) $(1,-10)$
(d) $(-10,1)$

Sol : www.cbse.site/ma/gm259

159. Point $P(x,y)$ is equidistant from the points $A(-5,3)$ and $B(7,2)$. What is the relation between x and y ?
(a) $12x+12y-17=0$
(b) $24x+2y-19=0$
(c) $24x-2y-19=0$
(d) $12x-12y+17=0$

Sol : www.cbse.site/ma/gm260

160. The x-coordinate of a point P is twice its y-coordinate. If P is equidistant from $Q(2,-5)$ and $R(-3,6)$, the co-ordinates of P will be
(a) $(4,8)$
(b) $(16,8)$
(c) $(8,16)$
(d) $(8,4)$

Sol : www.cbse.site/ma/gm261

Direction For Question : (162-163)
y-axis divides the line segment joining the points $A(5,-6)$ and $B(-1,-4)$.

161. What is the ratio in which y-axis divides the line segment ?
(a) 6 : 1
(b) 6 : 5
(c) 5 : 1
(d) 5 : 2

Sol : www.cbse.site/ma/gm262

162. What are the co-ordinates of the point of division?
(a) $\left(0,\frac{-13}{3}\right)$
(b) $\left(\frac{-13}{3},0\right)$
(c) $\left(\frac{13}{3},0\right)$
(d) $\left(0,\frac{13}{3}\right)$

Sol : www.cbse.site/ma/gm263

163. The point $(-3,k)$ divides the line segment joining the points $(-5,-4)$ and $(-2,3)$. The alue of k will be
(a) $\frac{2}{3}$
(b) $\frac{3}{2}$
(c) $\frac{1}{3}$
(d) $\frac{1}{2}$

Sol : www.cbse.site/ma/gm264

164. The points $(2,-2),(-2,1)$ and $(5,2)$ are the vertices of a _____triangle.
(a) equilateral
(b) scalene
(c) right angled
(d) right angled isosceles

Sol : www.cbse.site/ma/gm265

165. What is the ratio in which $P(4,m)$ divides the segment joining the points $A(2,3)$ and $B(6,-3)$.
(a) 1 : 3
(b) 1 : 2
(c) 1 : 1
(d) 1 : 4

Sol : www.cbse.site/ma/gm266

166. What is the value of m in previous question ?
(a) 3
(b) 2
(c) 1
(d) 0

Sol : www.cbse.site/ma/gm267

167. If the point $C(-1,2)$ divides internally the line segment joining $A(2,5)$ and $B(x,y)$ in the ratio 3 :4 the coordinates of B will be
(a) $(-2,-5)$
(b) $(-5,-2)$
(c) $(2,5)$
(d) $(5,2)$

Sol : www.cbse.site/ma/gm268

168. What is the ratio in which the segment joining the points $(1,-3)$ and $(4,5)$ is divided by x-axis?
(a) 3 : 5
(b) 3 : 7
(c) 2 : 5
(d) 2 : 3

Sol : www.cbse.site/ma/gm269

169. In previous question what is the coordinates of point on x-axis which divide the line?
(a) $(\frac{17}{8},\ 0)$
(b) $(-\frac{17}{8},\ 0)$
(c) $(0,\ \frac{17}{8})$
(d) $(0,\ -\frac{17}{8})$

Sol : www.cbse.site/ma/gm270

170. Which of the following point on y-axis which is equidistant from the points $(5,-2)$ and $(-3,2)$.
(a) $(0,6)$
(b) $(0,3)$c
(c) $(0,-2)$
(d) $(0,-4)$

Sol : www.cbse.site/ma/gm271

171. If the point $C(-1,2)$ divides internally the line segment joining the points $A(2,5)$ and $B(x,y)$ in the ratio 3:4, the value of x^2+y^2 will be
(a) 25
(b) 29
(c) 27
(d) 28

Sol : www.cbse.site/ma/gm272

172. What is the ratio in which the line segment joining the points $A(3,-3)$ and $B(-2,7)$ is divided by x -axis.
(a) 7 : 8
(b) 7 : 2
(c) 3 : 8
(d) 3 : 7

Sol : www.cbse.site/ma/gm273

173. In previous question what are the co-ordinates of point of division ?
(a) $(\frac{3}{2},0)$
(b) $(0,\frac{3}{2})$
(c) $(0,\frac{1}{2})$
(d) $(\frac{1}{2},0)$

Sol : www.cbse.site/ma/gm274

174. What are the co-ordinates of the points which divide the line segment joining the points $(5,7)$ and $(8,10)$ in 3 equal parts ?
(a) $P(6,8)$ and $Q(7,9)$
(b) $P(8,6)$ and $Q(9,\ 7)$
(c) $P(6,8)$ and $Q(9,\ 7)$
(d) $P(8,6)$ and $Q(7,9)$

Sol : www.cbse.site/ma/gm275

175. What are the co-ordinates of a point on the $x-$axis which is equidistant from the points $A(2,-5)$ and $B(-2,9)$?
(a) $(6,0)$
(b) $(4,0)$
(c) $(-6,0)$
(d) $(-7,0)$

Sol : www.cbse.site/ma/gm276

176. The line segment joining the points $A(3,-4)$ and $B(1,2)$ is trisected at the points P and Q. Find the coordinate of the PQ.

(a) $\left(\frac{4}{3},-2\right)$

(b) $\left(-2,\frac{7}{3}\right)$

(c) $\left(\frac{7}{3},-2\right)$

(d) $\left(-2,\frac{4}{3}\right)$

Sol : www.cbse.site/ma/gm277

177. What are the co-ordinates of the point on the $y-$ axis which is equidistant from the points $A(5,3)$ and $B(1,-5)$

(a) $\left(0,\frac{1}{2}\right)$

(b) $(0,1)$

(c) $\left(0,\frac{3}{2}\right)$

(d) $(0,2)$

Sol : www.cbse.site/ma/gm278

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CHAPTER 6

INTRODUCTION OF TRIGNOMETRY

1. Given that $\sin\alpha = \frac{\sqrt{3}}{2}$ and $\cos\beta = 0$, then the value of $\beta - \alpha$ is
(a) 0°
(b) 90°
(c) 60°
(d) 30°

Sol : www.cbse.site/ma/hm101

2. If ΔABC is right angled at C, then the value of $\sec(A+B)$ is
(a) 0
(b) 1
(c) $\frac{2}{\sqrt{3}}$
(d) not defined

Sol : www.cbse.site/ma/hm102

3. If $\sin\theta + \cos\theta = \sqrt{2}\cos\theta$, $(\theta \neq 90^\circ)$ then the value of $\tan\theta$ is
(a) $\sqrt{2}-1$
(b) $\sqrt{2}+1$
(c) $\sqrt{2}$
(d) $-\sqrt{2}$

Sol : www.cbse.site/ma/hm103

4. If $\cos A = \frac{4}{5}$, then the value of $\tan A$ is
(a) $\frac{3}{5}$
(b) $\frac{3}{4}$
(c) $\frac{4}{3}$
(d) $\frac{5}{3}$

Sol : www.cbse.site/ma/hm104

5. If $\sin A = \frac{1}{2}$, then the value of $\cot A$ is
(a) $\sqrt{3}$
(b) $\frac{1}{\sqrt{3}}$
(c) $\frac{\sqrt{3}}{2}$
(d) 1

Sol : www.cbse.site/ma/hm105

6. If $\sin\theta = \frac{a}{b}$, then $\cos\theta$ is equal to
(a) $\frac{b}{\sqrt{b^2-a^2}}$
(b) $\frac{\sqrt{b^2-a^2}}{a}$
(c) $\frac{\sqrt{b^2-a^2}}{b}$
(d) $\frac{a}{\sqrt{b^2-a^2}}$

Sol : www.cbse.site/ma/hm106

7. If $\cos(\alpha+\beta) = 0$, then $\sin(\alpha-\beta)$ can be reduced to
(a) $\cos\beta$
(b) $\cos 2\beta$
(c) $\sin\alpha$
(d) $\sin 2\alpha$

Sol : www.cbse.site/ma/hm107

8. If $\cos 9\alpha = \sin\alpha$ and $9\alpha < 90^\circ$, then the value of $\tan 5\alpha$ is
(a) $\frac{1}{\sqrt{3}}$
(b) $\sqrt{3}$
(c) 1
(d) 0

Sol : www.cbse.site/ma/hm108

9. If ΔABC is right angled at C, then the value of $\cos(A+B)$ is
(a) 0
(b) 1
(c) $\frac{1}{2}$
(d) $\frac{\sqrt{3}}{2}$

Sol : www.cbse.site/ma/hm109

10. If $\sin\alpha = \frac{1}{2}$ and $\cos\beta = \frac{1}{2}$, then the value of $(\alpha+\beta)$ is

(a) 0°
(b) 30°
(c) 60°
(d) 90°

Sol : www.cbse.site/ma/hm110

11. If $4\tan\theta = 3$, then $\left(\frac{4\sin\theta - \cos\theta}{4\sin\theta + \cos\theta}\right)$ is equal to

(a) $\frac{2}{3}$
(b) $\frac{1}{3}$
(c) $\frac{1}{2}$
(d) $\frac{3}{4}$

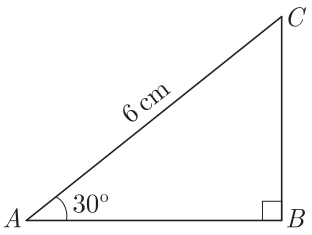
Sol : www.cbse.site/ma/hm111

12. If $\sin\theta - \cos\theta = 0$, then the value of $(\sin^4\theta + \cos^4\theta)$ is

(a) 1
(b) $\frac{3}{4}$
(c) $\frac{1}{2}$
(d) $\frac{1}{4}$

Sol : www.cbse.site/ma/hm112

13. In the adjoining figure, the length of BC is



(a) $2\sqrt{3}$ cm
(b) $3\sqrt{3}$ cm
(c) $4\sqrt{3}$ cm
(d) 3 cm

Sol : www.cbse.site/ma/hm113

14. If $x = p\sec\theta$ and $y = q\tan\theta$, then

(a) $x^2 - y^2 = p^2q^2$
(b) $x^2q^2 - y^2p^2 = pq$
(c) $x^2q^2 - y^2p^2 = \frac{1}{p^2q^2}$
(d) $x^2q^2 - y^2p^2 = p^2q^2$

Sol : www.cbse.site/ma/hm114

15. If $b\tan\theta = a$, the value of $\frac{a\sin\theta - b\cos\theta}{a\sin\theta + b\cos\theta}$ is

(a) $\frac{a-b}{a^2+b^2}$
(b) $\frac{a+b}{a^2+b^2}$
(c) $\frac{a^2+b^2}{a^2-b^2}$
(d) $\frac{a^2-b^2}{a^2+b^2}$

Sol : www.cbse.site/ma/hm115

16. $(\cos^4 A - \sin^4 A)$ is equal to

(a) $1 - 2\cos^2 A$
(b) $2\sin^2 A - 1$
(c) $\sin^2 A - \cos^2 A$
(d) $2\cos^2 A - 1$

Sol : www.cbse.site/ma/hm116

17. If $\sec 5A = \text{cosec}(A + 30^\circ)$, where $5A$ is an acute angle, then the value of A is

(a) 15°
(b) 5°
(c) 20°
(d) 10°

Sol : www.cbse.site/ma/hm117

18. If $x\sin^3\theta + y\cos^3\theta = \sin\theta\cos\theta$ and $x\sin\theta = y\cos\theta$, than $x^2 + y^2$ is equal to

(a) 0
(b) 1/2
(c) 1
(d) 3/2

Sol : www.cbse.site/ma/hm118

19. If $\tan\theta + \sin\theta = m$ and $\tan\theta - \sin\theta = n$, then $m^2 - n^2$ is equal to

(a) $\sqrt{mn}$
(b) $\sqrt{\frac{m}{n}}$
(c) $4\sqrt{mn}$
(d) None of these

Sol : www.cbse.site/ma/hm119

20. If $0 < \theta < \frac{\pi}{4}$, then the simplest form of $\sqrt{1 - 2\sin\theta\cos\theta}$ is
(a) $\sin\theta - \cos\theta$
(b) $\cos\theta - \sin\theta$
(c) $\cos\theta + \sin\theta$
(d) $\sin\theta\cos\theta$

Sol : www.cbse.site/ma/hm120

21. If $f(x) = \cos^2 x + \sec^2 x$, then $f(x)$
(a) ≥ 1
(b) ≤ 1
(c) ≥ 2
(d) ≤ 2

Sol : www.cbse.site/ma/hm121

22. **Assertion :** The value of $\sin\theta = \frac{4}{3}$ is not possible.
Reason : Hypotenuse is the largest side in any right angled triangle.
(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
(c) Assertion (A) is true but reason (R) is false.
(d) Assertion (A) is false but reason (R) is true.

Sol : www.cbse.site/ma/hm122

23. **Assertion :** $\sin^2 67^\circ + \cos^2 67^\circ = 1$
Reason : For any value of $\theta, \sin^2\theta + \cos^2\theta = 1$
(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
(c) Assertion (A) is true but reason (R) is false.
(d) Assertion (A) is false but reason (R) is true.

Sol : www.cbse.site/ma/hm123

24. If $\sin\theta = \frac{5}{13}$, then the value of $\tan\theta$ is ..... .
(a) $\frac{5}{13}$
(b) $\frac{5}{12}$
(c) $\frac{12}{13}$
(d) $\frac{8}{13}$

25. The value of the $(\tan^2 60^\circ + \sin^2 45^\circ)$ is ..... .
(a) $\frac{1}{2}$
(b) $\frac{3}{2}$
(c) 1
(d) $\frac{7}{2}$

Sol : www.cbse.site/ma/hm125

26. If $\cot\theta = \frac{12}{5}$, then the value of $\sin\theta$ is ..... .
(a) $\frac{5}{13}$
(b) $\frac{8}{12}$
(c) $\frac{12}{5}$
(d) $\frac{13}{5}$

Sol : www.cbse.site/ma/hm126

27. If $\tan(A+B) = \sqrt{3}$ and $\tan(A-B) = \frac{1}{\sqrt{3}}$, $A > B$, then the value of A is ..... .
(a) 45°
(b) 60°
(c) 90°
(d) 30°

Sol : www.cbse.site/ma/hm127

28. The value of $\left(\sin^2\theta + \frac{1}{1+\tan^2\theta}\right) =$ ..... .
(a) 0
(b) 1
(c) 2
(d) 3

Sol : www.cbse.site/ma/hm128

29. The value of $(1+\tan^2\theta)(1-\sin\theta)(1+\sin\theta) =$

..... .

(a) 0

(b) 1

(c) 2

(d) $\frac{1}{2}$

Sol : www.cbse.site/ma/hm129

30. $(1+\tan A-\sec A)\times(1+\tan A+\sec A)=?$

(a) $2\tan A$

(b) $2\sin A$

(c) $2\sec A$

(d) $2\cot A$

Sol : www.cbse.site/ma/hm130

31. If $\tan A=\cot B$, then the value of $(A+B)$ is

(a) $90°$

(b) $120°$

(c) $60°$

(d) $180°$

Sol : www.cbse.site/ma/hm131

32. If $x=3\sin\theta+4\cos\theta$ and $y=3\cos\theta-4\sin\theta$ then x^2+y^2 is

(a) 25

(b) 45

(c) 7

(d) 49

Sol : www.cbse.site/ma/hm132

33. $\sin^2 60°-2\tan 45°-\cos^2 30°=?$

(a) 2

(b) –2

(c) 1

(d) –1

Sol : www.cbse.site/ma/hm133

34. If $\sin\theta+\sin^2\theta=1$ then $\cos^2\theta+\cos^4\theta=?$

(a) 1

(b) 2

(c) $2\sqrt{2}$

(d) $2\sqrt{3}$

Sol : www.cbse.site/ma/hm134

35. In a triangle ABC, $\cos\left(\frac{B+C}{2}\right)$ will be

(a) $\sin\frac{A}{4}$

(b) $\cos A$

(c) $\sin\frac{A}{2}$

(d) $\cos\frac{A}{2}$

Sol : www.cbse.site/ma/hm135

36. If $\sec\theta\cdot\sin\theta=0$, then value of θ will be

(a) 0

(b) $90°$

(c) $45°$

(d) ∞

Sol : www.cbse.site/ma/hm136

37. If $\tan 2A=\cot(A+60°)$, where $2A$ is an acute angle, the value of A will be

(a) $20°$

(b) $30°$

(c) $60°$

(d) $10°$

Sol : www.cbse.site/ma/hm137

38. If $\tan(3x+30°)=1$ then the value of x. will be

(a) $5°$

(b) $10°$

(c) $20°$

(d) $30°$

Sol : www.cbse.site/ma/hm138

39. What happens to value of $\cos\theta$ when θ increases from $0°$ to $90°$.

(a) $\cos\theta$ decreases from 1 to 0.

(b) $\cos\theta$ increases from 0 to 1.

(c) $\cos\theta$ increases from $\frac{1}{2}$ to 1

(d) $\cos\theta$ decreases from 1 to $\frac{1}{2}$

Sol : www.cbse.site/ma/hm139

40. If A and B are acute angles and $\sin A=\cos B$, then

the value of $A+B$ is
(a) $60°$
(b) $180°$
(c) $90°$
(d) $120°$

Sol : www.cbse.site/ma/hm140

41. If $\cos A = \frac{2}{5}$, the value of $4+4\tan^2 A$ will be
(a) 1
(b) 2
(c) 4
(d) 25

Sol : www.cbse.site/ma/hm141

42. If $k+1 = \sec^2\theta(1+\sin\theta)(1-\sin\theta)$, then the value of k. will be
(a) 0
(b) 1
(c) 2
(d) 15

Sol : www.cbse.site/ma/hm142

43. The value of $\sin^2 41^\circ + \sin^2 49^\circ$ will be
(a) 1
(b) $\sqrt{2}$
(c) 2
(d) $\sqrt{3}$

Sol : www.cbse.site/ma/hm143

44. $1+\frac{\cot^2\alpha}{1+\operatorname{cosec}\alpha} = ?$
(a) $\cos\alpha$
(b) $\tan\alpha$
(c) $\operatorname{cosec}\alpha$
(d) $\sin\alpha$

Sol : www.cbse.site/ma/hm144

45. $\frac{\sin A - 2\sin^3 A}{2\cos^3 A - \cos A} = ?$
(a) $\sin A$
(b) $\tan A$
(c) $\cos A$
(d) $\cot A$

Sol : www.cbse.site/ma/hm145

46. $\tan^4\theta + \tan^2\theta = ?$
(a) $\sec^2\theta - 2\sec^4\theta$
(b) $2\sec^2\theta - \sec^4\theta$
(c) $\sec^2\theta - \sec^4\theta$
(d) $\sec^4\theta - \sec^2\theta$

Sol : www.cbse.site/ma/hm146

47. $\sqrt{\frac{1-\sin\theta}{1+\sin\theta}} = ?$
(a) $\sin\theta - \cos\theta$
(b) $\sec\theta - \tan\theta$
(c) $\sec\theta + \tan\theta$
(d) $\sin\theta + \cos\theta$

Sol : www.cbse.site/ma/hm147

48. $\frac{1-\tan^2\theta}{1+\tan^2\theta} = ?$
(a) 1
(b) $\cos^2\theta - \sin^2\theta$
(c) $\sin^2\theta$
(d) $\cos^2\theta$

Sol : www.cbse.site/ma/hm148

49. $\frac{\tan^2\theta}{1+\tan^2\theta} + \frac{\cot^2\theta}{1+\cot^2\theta} = ?$
(a) 1
(b) $2\tan^2\theta$
(c) $2\cot^2\theta$
(d) $2\sec^2\theta$

Sol : www.cbse.site/ma/hm149

50. $\frac{1}{1+\sin\theta} + \frac{1}{1-\sin\theta} = ?$
(a) 1
(b) $2\sec^2\theta$
(c) $2\sin^2\theta$
(d) $2\cos^2\theta$

Sol : www.cbse.site/ma/hm150

51. $\frac{\operatorname{cosec}\theta}{\operatorname{cosec}\theta-1}+\frac{\operatorname{cosec}\theta}{\operatorname{cosec}\theta+1}=?$

(a) 1
(b) $2\sec^2\theta$
(c) $2\tan^2\theta$
(d) $2\sin^2\theta$

Sol : www.cbse.site/ma/hm151

52. If $5\tan\theta=3$, then what is the value of $\left(\frac{5\sin\theta-3\cos\theta}{4\sin\theta+3\cos\theta}\right)$?

(a) 1
(b) 0
(c) 3
(d) 4

Sol : www.cbse.site/ma/hm152

53. $\frac{3\tan^2 30^\circ+\tan^2 60^\circ+\operatorname{cosec}30^\circ-\tan 45^\circ}{\cot^2 45^\circ}=?$

(a) 2
(b) 3
(c) 4
(d) 5

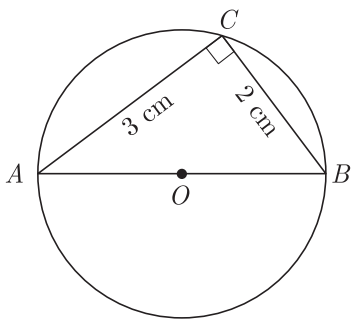
Sol : www.cbse.site/ma/hm153

54. If $\sin\phi=\frac{1}{2}$, then $3\cos\phi-4\cos^3\phi=?$

(a) 0
(b) –1
(c) 1
(d) –2

Sol : www.cbse.site/ma/hm154

55. In the given figure, AOB is a diameter of a circle with centre O, The value of $\tan A\tan B$. will be



(a) 1
(b) 2
(c) $\sqrt{3}$
(d) 3

Sol : www.cbse.site/ma/hm155

56. The trigonometric ratio of $\sec A$ is equal to

(a) $\frac{1}{\sqrt{1-\cos^2 A}}$
(b) $\frac{1}{\sqrt{1-\sin^2 A}}$
(c) $\frac{1}{\sqrt{1-\tan^2 A}}$
(d) $\frac{1}{\sqrt{1-\cot^2 A}}$

Sol : www.cbse.site/ma/hm156

57. The trigonometric ratio of $\tan A$ is equal to

(a) $\frac{\sin A}{\sqrt{1-\cos^2 A}}$
(b) $\frac{\sin A}{\sqrt{1-\sin^2 A}}$
(c) $\frac{\cos A}{\sqrt{1-\sec^2 A}}$
(d) $\frac{1}{\sqrt{1-\cot^2 A}}$

Sol : www.cbse.site/ma/hm157

58. $\frac{(\sin^4\theta+\cos^4\theta)}{1-2\sin^2\theta\cos^2\theta}=?$

(a) 1
(b) $\sin\theta$
(c) $\tan\theta$
(d) $\cos\theta$

Sol : www.cbse.site/ma/hm158

59. $\sec^4\theta-\sec^2\theta=?$

(a) $2\tan\theta$
(b) $2\tan^2\theta$
(c) $-2\tan^2\theta$
(d) $\tan^2\theta+\tan^4\theta$

Sol : www.cbse.site/ma/hm159

60. If $\frac{\cos\theta}{1-\sin\theta}+\frac{\cos\theta}{1+\sin\theta}=4;\theta\le 90^\circ$ the value of θ will be

(a) 30°
(b) 45°
(c) 60°
(d) 90°

Sol : www.cbse.site/ma/hm160

61. $\sqrt{\frac{1-\cos A}{1+\cos A}} = ?$

(a) $1+\cos A$

(b) $\operatorname{cosec} A + \cot A$

(c) $\operatorname{cosec} A - \cot A$

(d) $1-\cos A$

Sol : www.cbse.site/ma/hm161

62. If $\sin\theta - \cos\theta = \frac{1}{2}$, the value of $\sin\theta + \cos\theta$ will be

(a) $\frac{\sqrt{2}}{3}$

(b) $\frac{\sqrt{7}}{2}$

(c) $\frac{\sqrt{5}}{3}$

(d) $\frac{\sqrt{5}}{2}$

Sol : www.cbse.site/ma/hm162

63. If θ be an acute angle and $5\operatorname{cosec}\theta = 7$, then value of $\sin\theta + \cos^2\theta - 1$ will be

(a) $\frac{10}{49}$

(b) $\frac{39}{49}$

(c) $\frac{10}{47}$

(d) $\frac{37}{47}$

Sol : www.cbse.site/ma/hm163

64. If $\sin A = \frac{\sqrt{3}}{2}$, the value of $2\cot^2 A - 1$ will be

(a) $\frac{1}{3}$

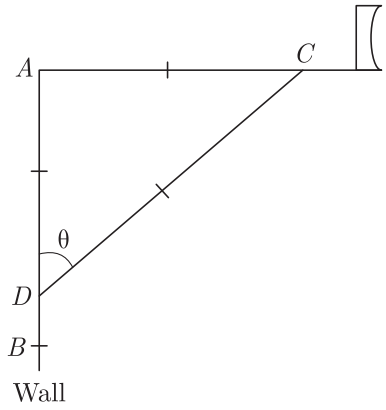
(b) $-\frac{1}{3}$

(c) $\frac{1}{2}$

(d) $-\frac{1}{2}$

Sol : www.cbse.site/ma/hm164

65. The rod of TV disc antenna is fixed at right angles to wall AB and a rod CD is supporting the disc as shown in Figure. If $AC = 3\,\text{m}$ long and $CD = 5\,\text{m}$, the value of $\tan\theta$ will be



(a) 1

(b) $\frac{3}{4}$

(c) $\frac{4}{5}$

(d) $\frac{3}{5}$

Sol : www.cbse.site/ma/hm165

66. In previous question the value of $\sec\theta + \operatorname{cosec}\theta$ will be

(a) 2

(b) $\frac{35}{12}$

(c) $\frac{45}{12}$

(d) $\frac{7}{3}$

Sol : www.cbse.site/ma/hm165

67. $\frac{\cot\theta + \operatorname{cosec}\theta - 1}{\cot\theta - \operatorname{cosec}\theta + 1} = ?$

(a) $\frac{1-\cos\theta}{\sin\theta}$

(b) $\frac{1+\cos\theta}{\sin\theta}$

(c) $\frac{1-\sin\theta}{\cos\theta}$

(d) $\frac{1+\sin\theta}{\cos\theta}$

Sol : www.cbse.site/ma/hm166

68. If $\sin\theta + \cos\theta = \sqrt{2}$ then $\tan\theta + \cot\theta = ?$

(a) 1

(b) 2

(c) 3

(d) 4

Sol : www.cbse.site/ma/hm167

69. If $\sin\theta+\cos\theta=\sqrt{3}$, then $\tan\theta+\cot\theta=?$
(a) 1
(b) 2
(c) 3
(d) 4
Sol : www.cbse.site/ma/hm168

70. If $1+\sin^2\theta=3\sin\theta\cos\theta$, then $\tan\theta$ will be
(a) only 1
(b) only ½
(c) both 1 and ½
(d) only 2
Sol : www.cbse.site/ma/hm169

71. $(\sin\theta+\operatorname{cosec}\theta)^2+(\cos\theta+\sec\theta)^2=?$
(a) $1+\tan^2\theta+\cot^2\theta$
(b) $2+\tan^2\theta+\cot^2\theta$
(c) $5+\tan^2\theta+\cot^2\theta$
(d) $7+\tan^2\theta+\cot^2\theta$
Sol : www.cbse.site/ma/hm170

72. $(1+\cot A-\operatorname{cosec} A)(1+\tan A+\sec A)=?$
(a) 1
(b) 2
(c) 3
(d) 4
Sol : www.cbse.site/ma/hm171

73. In ΔABC, $\angle B=90^\circ$, $BC=5$ cm, $AC-AB=1$, What wiil be the value of $\dfrac{1+\sin C}{1+\cos C}$?
(a) $\frac{31}{36}$
(b) $\frac{25}{18}$
(c) $\frac{36}{31}$
(d) $\frac{18}{25}$
Sol : www.cbse.site/ma/hm172

74. $\dfrac{\cos A}{1+\tan A}-\dfrac{\sin A}{1+\cot A}=?$
(a) $\sin A-\cos A$
(b) $\sin A+\cos A$
(c) $\cos A-\sin A$
(d) $-\sin A-\cos A$
Sol : www.cbse.site/ma/hm173

75. If $b\cos\theta=a$, then $\operatorname{cosec}\theta+\cot\theta=?$
(a) $\sqrt{\frac{b-a}{2ab}}$
(b) $\sqrt{\frac{b+a}{b-a}}$
(c) $\sqrt{\frac{a-b}{2ab}}$
(d) $\sqrt{\frac{b-a}{b+a}}$
Sol : www.cbse.site/ma/hm174

76. $\dfrac{\sin\theta-2\sin^3\theta}{2\cos^3-\cos\theta}=?$
(a) $\tan\theta$
(b) $\sin\theta$
(c) $\cos\theta$
(d) $\sec\theta$
Sol : www.cbse.site/ma/hm175

77. $(\cot\theta-\operatorname{cosec}\theta)^2=?$
(a) $\frac{1-\cos\theta}{1+\cos\theta}$
(b) $\frac{1+\cos\theta}{1-\cos\theta}$
(c) $\frac{\cos\theta+1}{\cos\theta-1}$
(d) $\frac{\cos\theta-1}{\cos\theta+1}$
Sol : www.cbse.site/ma/hm176

78. $(\operatorname{cosec}\theta-\sin\theta)(\sec\theta-\cos\theta)(\tan\theta+\cot\theta)=?$
(a) $2\sqrt{2}$
(b) 0
(c) 1
(d) $\sqrt{2}$
Sol : www.cbse.site/ma/hm177

79. $\operatorname{cosec}^2\theta-\tan^2(90^\circ-\theta)=?$
(a) $\sin^2\theta+\cos^2(90^\circ-\theta)$
(b) $\cos^2\theta+\sin^2(90^\circ-\theta)$
(c) $\tan^2\theta+\tan^2(90^\circ-\theta)$
(d) $\cot^2\theta+\tan^2(90^\circ-\theta)$
Sol : www.cbse.site/ma/hm178

80. $\dfrac{\operatorname{cosec}^2\theta}{\operatorname{cosec}\theta-1}-\dfrac{\operatorname{cosec}^2\theta}{\operatorname{cosec}\theta+1}=?$
(a) $2\sin^2\theta$
(b) $2\sec^2\theta$
(c) $2\cos^2\theta$

(d) $2\,\text{cosec}^2\theta$

Sol : www.cbse.site/ma/hm179

81. $\dfrac{1}{\text{cosec}\,A-\cot A}+\dfrac{1}{\text{cosec}\,A+\cot A}=?$

(a) $\frac{2}{\sin A}$

(b) $\frac{1}{\sin A}$

(c) $\frac{1}{\cos A}$

(d) $\frac{2}{\cos A}$

Sol : www.cbse.site/ma/hm180

82. If $\sec\theta = x+\frac{1}{4x}$ then $\sec\theta+\tan\theta=?$

(a) $2x$

(b) $\frac{1}{2x}$

(c) both (a) and (b) are correct

(d) x

Sol : www.cbse.site/ma/hm181

83. $\dfrac{\sin\theta-\cos\theta}{\sin\theta+\cos\theta}+\dfrac{\sin\theta+\cos\theta}{\sin\theta-\cos\theta}=?$

(a) $\frac{2}{2\sin^2\theta-1}$

(a) $\frac{1}{1-2\cos^2 A}$

(b) $\frac{1}{1+2\cos^2 A}$

(c) $\frac{2}{2\sin^2 A-1}$

(d) $\frac{1}{1-2\sin^2 A}$

Sol : www.cbse.site/ma/hm182

84. If $x\sin^3\theta+y\cos^3\theta=\sin\theta\cos\theta$ and $x\sin\theta=y\cos\theta$, then x^2+y^2 is equal to

(a) 1

(b) 2

(c) 3

(d) 4

Sol : www.cbse.site/ma/hm183

85. $\dfrac{\cos^3\theta+\sin^3\theta}{\cos\theta+\sin\theta}+\dfrac{\cos^3\theta-\sin^3\theta}{\cos\theta-\sin\theta}=?$

(a) 1

(b) 2

(c) 3

(d) 4

Sol : www.cbse.site/ma/hm184

86. $\sin A$ is equal to

(a) $\sqrt{1-\sec^2 A}$

(b) $\sqrt{\sec^2 A-1}$

(c) $\frac{\sec A}{\sqrt{\sec^2 A-1}}$

(d) $\frac{\sqrt{\sec^2 A-1}}{\sec A}$

Sol : www.cbse.site/ma/hm185

87. $\cos A$ is equal to

(a) $\sqrt{1-\sec^2 A}$

(b) $\sqrt{\sec^2 A-1}$

(c) $\frac{\sec A}{\sqrt{\sec^2 A-1}}$

(d) $\frac{\sqrt{\sec^2 A-1}}{\sec A}$

Sol : www.cbse.site/ma/hm186

88. $\text{cosec}\,A$ is equal to

(a) $\sqrt{1-\sec^2 A}$

(b) $\sqrt{\sec^2 A-1}$

(c) $\frac{\sec A}{\sqrt{\sec^2 A-1}}$

(d) $\frac{\sqrt{\sec^2 A-1}}{\sec A}$

Sol : www.cbse.site/ma/hm187

89. If $\sin\theta+\cos\theta=\sqrt{2}$, then $\tan\theta+\cot\theta=?$

(a) 1

(b) 2

(c) $2\sqrt{2}$

(d) $2\sqrt{3}$

Sol : www.cbse.site/ma/hm188

90. If $\sin\theta+\cos\theta=\sqrt{3}$, then $\tan\theta+\cot\theta=?$

(a) 1

(b) 2

(c) $2\sqrt{2}$

(d) $2\sqrt{3}$

Sol : www.cbse.site/ma/hm189

91. If $\sin A=\dfrac{3}{4}$ then $\sec A$ is equal to

(a) $\frac{4}{\sqrt{5}}$

(b) $\frac{4}{\sqrt{7}}$

(c) $\frac{\sqrt{5}}{4}$

(d) $\frac{\sqrt{7}}{4}$

Sol : www.cbse.site/ma/hm190

92. $\frac{\tan\theta}{1-\cot\theta}+\frac{\cot\theta}{1-\tan\theta}=?$

(a) $1+\tan\theta\operatorname{cosec}\theta$

(b) $1+\cos\theta\operatorname{cosec}\theta$

(c) $1+\sin\theta\operatorname{cosec}\theta$

(d) $1+\sec\theta\operatorname{cosec}\theta$

Sol : www.cbse.site/ma/hm191

93. $\frac{\sin\theta}{\cot\theta+\operatorname{cosec}\theta}=?$

(a) $1-\cos\theta$

(b) $1+\cos\theta$

(c) $1+\sin\theta$

(d) $1-\sin\theta$

Sol : www.cbse.site/ma/hm192

94. $2+\frac{\sin\theta}{\cot\theta-\operatorname{cosec}\theta}=?$

(a) $1-\cos\theta$

(b) $1+\cos\theta$

(c) $1+\sin\theta$

(d) $1-\sin\theta$

Sol : www.cbse.site/ma/hm193

95. Given that $\sin(A+2B)=\frac{\sqrt{3}}{2}$ and $\cos(A+4B)=0$, where A and B are acute angles. The value of A is

(a) $30°$

(b) $45°$

(c) $60°$

(d) $90°$

Sol : www.cbse.site/ma/hm194

Sol : [Board 2019 OD]

96. If $4\tan\theta=3$, $\left(\frac{4\sin\theta-\cos\theta+1}{4\sin\theta+\cos\theta-1}\right)=?$

(a) $\frac{11}{13}$

(b) $\frac{11}{15}$

(c) $\frac{13}{11}$

(d) $\frac{15}{11}$

Sol : www.cbse.site/ma/hm195

97. $\tan^2 30°\sin 30°+\cos 60°\sin^2 90°\tan^2 60°-2\tan 45°\cos^2 0°\sin 90°$

(a) $\frac{2}{3}$

(b) $\frac{1}{3}$

(c) $-\frac{2}{3}$

(d) $-\frac{1}{3}$

Sol : www.cbse.site/ma/hm196

98. Given that $\tan(A+B)=\frac{\tan A+\tan B}{1-\tan A\tan B}$, the value of $\tan 75°$ will be

(a) 0

(b) ∞

(c) $2+\sqrt{3}$

(d) $2-\sqrt{3}$

Sol : www.cbse.site/ma/hm197

99.

$\sin^2 30°\cos^2 45°+4\tan^2 30°+\frac{1}{2}\sin 90°-2\cos^2 90°+\frac{1}{24}=?$

(a) 0

(b) 1

(c) 2

(d) 3

Sol : www.cbse.site/ma/hm198

100. $4(\sin^4 30°+\cos^4 60°)-3(\cos^2 45-\sin^2 90°)=?$

(a) 0

(b) 1

(c) 2

(d) 3

Sol : www.cbse.site/ma/hm199

101. If $15\tan^2\theta+4\sec^2\theta=23$, the value of $(\sec\theta+\operatorname{cosec}\theta)^2-\sin^2\theta$ will be

(a) 6.5

(b) 3.5

(c) 7.5

(d) 4.5

Sol : www.cbse.site/ma/hm200

102. If $\sqrt{3}\cot^2\theta-4\cot\theta+\sqrt{3}=0$, then the value of $\cot^2\theta+\tan^2\theta$ will be

(a) $\frac{15}{7}$

(b) $\frac{10}{3}$
(c) $\frac{15}{8}$
(d) $\frac{10}{7}$

Sol : www.cbse.site/ma/hm201

103. $\frac{2\cos^2 60^\circ + 3\sec^2 30^\circ - 2\tan^2 45^\circ}{\sin^2 30^\circ + \cos^2 45^\circ} = ?$
(a) $\frac{15}{7}$
(b) $\frac{10}{3}$
(c) $\frac{15}{8}$
(d) $\frac{10}{7}$

Sol : www.cbse.site/ma/hm202

104. $\frac{\tan\theta}{1-\cot\theta} + \frac{\cot\theta}{1-\tan\theta} = ?$
(a) $1+\sec\theta+\cot\theta$
(b) $1+\tan\theta+\cot\theta$
(c) $1+\tan\theta+\sec\theta$
(d) $1+\sec\theta+\operatorname{cosec}\theta$

Sol : www.cbse.site/ma/hm203

105. In an acute angled triangle ABC if $\sin(A+B-C) = \frac{1}{2}$ and $\cos(B+C-A) = \frac{1}{\sqrt{2}}$, measure of $\angle B$ is
(a) 37.5°
(b) 45°
(c) 75°
(d) 62.5°

Sol : www.cbse.site/ma/hm204

106. In previous question measure of $\angle A$ is
(a) 67.5°
(b) 45°
(c) 75°
(d) 62.5°

Sol : www.cbse.site/ma/hm204

107. If $x = a\sec\theta, y = b\tan\theta$, then $b^2x^2 - a^2y^2$ equal to
(a) $\frac{a^2+b^2}{a^2b^2}$
(b) $\frac{a^2b^2}{a^2+b^2}$
(c) $\frac{a^2b^2}{a+b}$
(d) a^2b^2

Sol : www.cbse.site/ma/hm205

108. If $\cos\theta + \sin\theta = p$ and $\sec\theta + \operatorname{cosec}\theta = q$, then $q(p^2-1) = ?$
(a) $2p$
(b) p
(c) $4p$
(d) $3p$

Sol : www.cbse.site/ma/hm206

109. If $x = r\sin A\cos C$, $y = r\sin A\sin C$ and $z = r\cos A$, then $x^2+y^2+z^2$ is equal to
(a) $2r^3$
(b) $2r^2$
(c) r^3
(d) r^2

Sol : www.cbse.site/ma/hm207

110. $\sqrt{\frac{1+\sin\theta}{1-\sin\theta}} + \sqrt{\frac{1-\sin\theta}{1+\sin\theta}} = ?$
(a) $2\sin\theta$
(b) $2\sec\theta$
(c) $2\cos\theta$
(d) $2\operatorname{cosec}\theta$

Sol : www.cbse.site/ma/hm208

111. $(1-\sin\theta+\cos\theta)^2 = ?$
(a) $2(1+\cos\theta)(1-\sin\theta)$
(b) $2(1-\cos\theta)(1+\sin\theta)$
(c) $(1-\cos\theta)(1+\sin\theta)$
(d) $(1+\cos\theta)(1-\sin\theta)$

Sol : www.cbse.site/ma/hm209

112. $\frac{\tan\theta+\sec\theta-1}{\tan\theta-\sec\theta-1} = ?$
(a) $2\tan\theta\sec\theta$
(b) $\sec\theta-\tan\theta$
(c) $\tan\theta-\sec\theta$
(d) $\tan\theta+\sec\theta$

Sol : www.cbse.site/ma/hm210

113. If $\sin\theta = \frac{c}{\sqrt{c^2+d^2}}$ and $d>0$, then $\cos\theta$ is equal to
(a) $\frac{\sqrt{c^2+d^2}}{d}$
(b) $\frac{\sqrt{c^2+d^2}}{c}$

(c) $\frac{c}{\sqrt{c^2+d^2}}$
(d) $\frac{d}{\sqrt{c^2+d^2}}$

Sol : www.cbse.site/ma/hm211

114. If $\sin\theta = \frac{c}{\sqrt{c^2+d^2}}$ and $d>0$, then $\tan\theta$ is equal to
(a) $\frac{d}{c}$
(b) $\frac{c}{d}$
(c) $\frac{c}{\sqrt{c^2+d^2}}$
(d) $\frac{d}{\sqrt{c^2+d^2}}$

Sol : www.cbse.site/ma/hm212

115. If $\tan\theta = \frac{1}{\sqrt{5}}$, value of $\frac{\text{cosec}^2\theta - \sec^2\theta}{\text{cosec}^2\theta + \sec^2\theta}$ is equal to
(a) $\frac{2}{3}$
(b) $\frac{1}{3}$
(c) $\frac{3}{4}$
(d) $\frac{1}{5}$

Sol : www.cbse.site/ma/hm213

116. If $\sec\theta + \tan\theta = p$, then $\frac{1}{p}$ is equal to
(a) $2\tan\theta\sec\theta$
(b) $\sec\theta - \tan\theta$
(c) $\tan\theta - \sec\theta$
(d) $\tan\theta + \sec\theta$

Sol : www.cbse.site/ma/hm214

117. In previous question $\cos\theta$ is equal to
(a) $\frac{2p}{p^2+1}$
(b) $\frac{p^2-1}{p^2+1}$
(c) $\frac{p^2+1}{p^2-1}$
(d) $\frac{2p}{p^2-1}$

Sol : www.cbse.site/ma/hm214

118. $(\text{cosec}\,\theta + \cot\theta)^2 = ?$
(a) $\frac{\sec\theta+1}{\sec\theta-1}$
(b) $\frac{\sec\theta-1}{\sec\theta+1}$
(c) $\frac{1+\sec\theta}{1-\sec\theta}$
(d) $\frac{1-\sec\theta}{1+\sec\theta}$

Sol : www.cbse.site/ma/hm215

119. $(\sin A + \sec A)^2 + (\cos A + \text{cosec}\,A)^2 = ?$
(a) $(1+\sec A\,\text{cosec}\,A)^2$
(b) $(1+\cos A\sin A)^2$
(c) $(1+\cos A\,\text{cosec}\,A)^2$
(d) $(1+\sin A\sec A)^2$

Sol : www.cbse.site/ma/hm216

120. If $4\sin\theta = 3$, then $\cos\theta$ is equal to
(a) $\frac{3}{\sqrt{7}}$
(b) $\frac{2}{\sqrt{7}}$
(c) $\frac{\sqrt{7}}{4}$
(d) $\frac{\sqrt{7}}{2}$

Sol : www.cbse.site/ma/hm217

121. If $4\sin\theta = 3$, then $\tan\theta$ is equal to
(a) $\frac{3}{\sqrt{7}}$
(b) $\frac{2}{\sqrt{7}}$
(c) $\frac{\sqrt{7}}{4}$
(d) $\frac{\sqrt{7}}{2}$

Sol : www.cbse.site/ma/hm218

122. $\sec^2\theta + \text{cosec}^2\theta$ can never be less than $--$.
(a) 1
(b) 2
(c) 4
(d) 0

Sol : www.cbse.site/ma/hm219

123. If $\tan 5\phi = 1$ then ϕ is equal to
(a) 9^o
(b) 90^o
(c) 45^o
(d) 30^o

Sol : www.cbse.site/ma/hm220

124. If $\frac{\sin\phi}{1+\cos\phi} + \frac{1+\cos\phi}{\sin\phi} = 4$ then ϕ is equal to
(a) 9^o
(b) 90^o
(c) 45^o
(d) 30^o

Sol : www.cbse.site/ma/hm221

125. If $\tan A + \sin A = m$ and $\tan A - \sin A = n$, then $m^2 - n^2$ is equal to

(a) $4\cos A \tan A$

(b) $4\sin A \tan A$

(c) $2\cos A \tan A$

(d) $2\cos A \tan A$

Sol : www.cbse.site/ma/hm222

126. If $\tan A + \sin A = m$ and $\tan A - \sin A = n$, then $4\sqrt{mn}$ is equal to

(a) $4\cos A \tan A$

(b) $4\sin A \tan A$

(c) $2\cos A \tan A$

(d) $2\cos A \tan A$

Sol : www.cbse.site/ma/hm223

127. If $\frac{\cos\alpha}{\cos\beta} = m$ and $\frac{\cos\alpha}{\sin\beta} = n$, then $(m^2 + n^2)\cos^2\beta = ?$

(a) n^2

(b) $2n^2$

(c) m^2

(d) $2m^2$

Sol : www.cbse.site/ma/hm224

128. If $7\,\mathrm{cosec}\,\phi - 3\cot\phi = 7$, then $7\cot\phi - 3\,\mathrm{cosec}\,\phi = ?$

(a) 1

(b) 2

(c) 3

(d) 4

Sol : www.cbse.site/ma/hm225

129. $\frac{\cos\theta - \sin\theta + 1}{\cos\theta + \sin\theta - 1} = ?$

(a) $\cos\theta - \sin\theta$

(b) $\sin\theta - \cos\theta$

(c) $\sin\theta + \cos\theta$

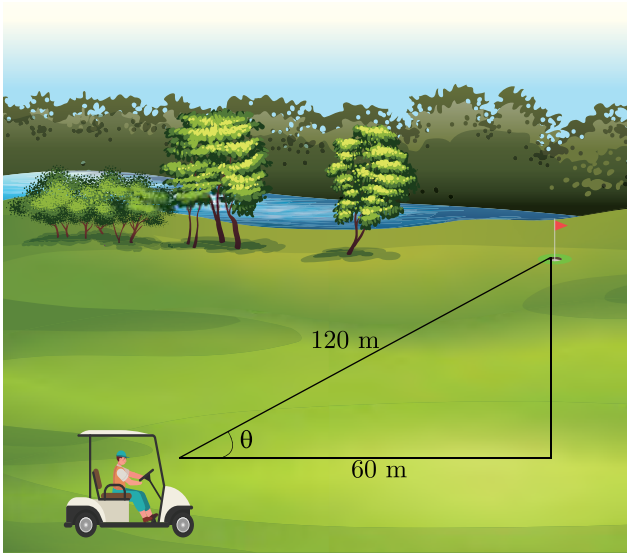
(d) $\mathrm{cosec}\,\theta + \cot\theta$

Sol : www.cbse.site/ma/hm226

COMPETENCEY BASED QUESTIONS

130. Golf is a game played in an open field where the golfer plays his golf ball into a hole by using different types of clubs (golf instruments). In golf, a golfer plays a number of holes in a given order. 18 holes played in an order controlled by the golf course design, normally make up a game.

On your approach shot to the ninth green, the Global Positioning System (GPS) your cart is equipped with tells you the pin is 180 meter away. The distance plate states the straight line distance to the hole is 90 meter. Relative to a straight line between the plate and the hole, at what acute angle should you hit the shot?



(a) 60°

(b) 30°

(c) 90°

(d) 45°

Sol : www.cbse.site/ma/hm227

Direction For Question : (131-132)

The fire brigade is an organization which has the job of putting out fires; used especially to refer to the people who actually fight the fires.

A fire brigade ladder-truck arrives at a highrise apartment complex where a fire has broken out. The maximum length the ladder extends is 40 meter and the angle of inclination is 45°. Assume the ladder is mounted atop a 3 meter high truck.

131. How high up the side of the building does the ladder reach?

(a) 22.46 m

(b) 31.28 m

(c) 14.39 m

(d) 28.46 m

Sol : www.cbse.site/ma/hm228

132. What is the length of base of truck ?

(a) 12.46 m

(b) 28.28 m

(c) 8.96 m

(d) 31.28 m

Sol : www.cbse.site/ma/hm228

Direction For Question : (133-134)

A heavy-duty ramp is used to winch heavy appliances from street level up to a warehouse loading dock. If the ramp is 2 meter high and the incline is 4 meter long,

133. What angle does the dock make with the street?

(a) 60°

(b) 30°

(c) 90°

(d) 45°

Sol : www.cbse.site/ma/hm229

134. How long is the base of the ramp?

(a) 4.1 m

(b) 3.5 m

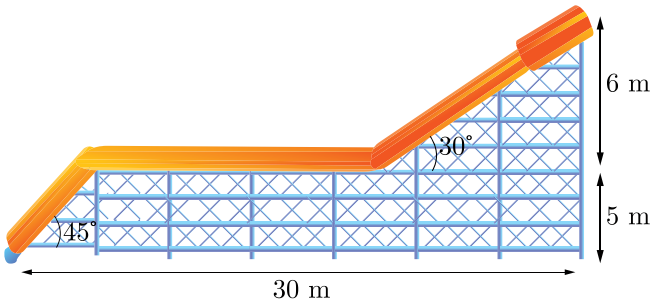
(c) 5.3 m

(d) 2.1 m

Sol : www.cbse.site/ma/hm229

Direction For Question : (135-136)

Water Slide Design : Slide shown in the figure is part of a design for a water slide.



135. What is the length of flat part of slide.

(a) 44.69 m

(b) 22.16 m

(c) 16.34 m

(d) 34.18 m

Sol : www.cbse.site/ma/hm230

136. What is the total length of the slide?

(a) 5.4 m

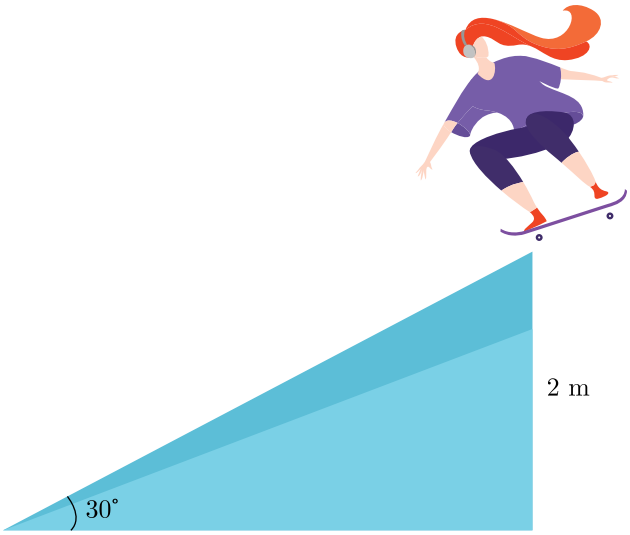
(b) 21.6 m

(c) 33.7 m

(d) 42.2 m

Sol : www.cbse.site/ma/hm230

137. A skateboarder wishes to build a jump ramp that is inclined at a 30° angle and that has a maximum height of 2 meter. What is the horizontal width of the ramp.



(a) 2.6 m

(b) 3.5 m

(c) 5.9 m

(d) 4.6 m

Sol : www.cbse.site/ma/hm231

138. For best illumination of a piece of art, a lighting specialist for an art gallery recommends that a ceiling-mounted light be 3 meter from the piece of art and that the angle of depression of the light be 30°. How far from a wall should the light be placed so that the recommendations of the specialist are met? Notice that the art extends outward 10 cm from the wall.

(a) 2.7 m

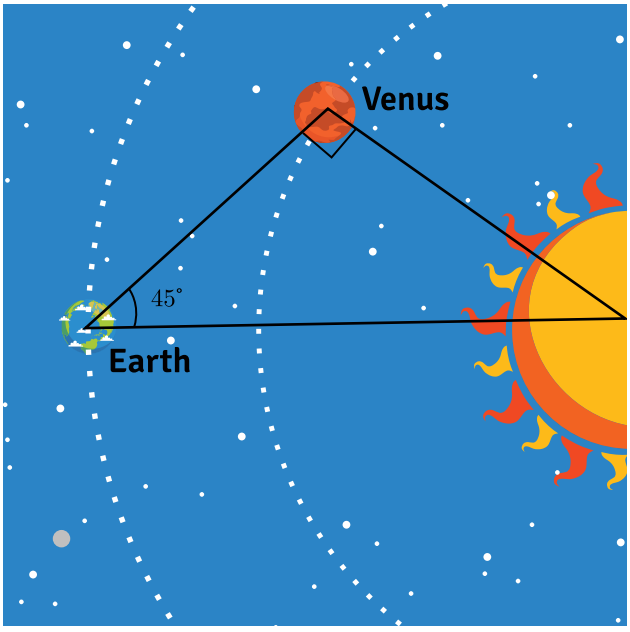
(b) 1.8 m

(c) 3.9 m

(d) 3.1 m

Sol : www.cbse.site/ma/hm232

139. Venus rotates in a nearly circular orbit around the sun. The largest angle formed by Venus, Earth, and the sun is 45°. The distance from Earth to the sun is approximately 149 million kilometers. See the following figure. What is the orbital radius r of Venus? Round to the nearest million kilometers.



(a) 48

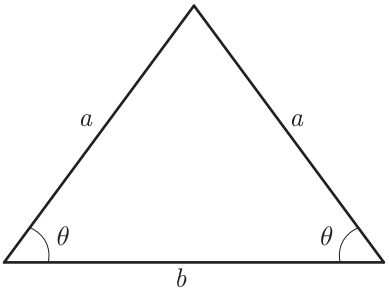
(b) 105

(c) 56

(d) 145

Sol : www.cbse.site/ma/hm233

140. Triangle Consider the following isosceles triangle. The length of each of the two equal sides of the triangle is a, and each of the base angles has a measure of θ. The area of the triangle is



(a) $a^2 \sin\theta\cos\theta$

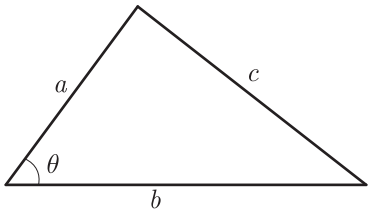
(b) $2a^2 \sin\theta\cos\theta$

(c) $\frac{1}{2}a^2 \sin\theta\cos\theta$

(d) $ab\sin\theta\cos\theta$

Sol : www.cbse.site/ma/hm234

141. The area of the triangle given in the figure is



(a) $\frac{1}{2}bc\sin\theta$

(b) $bc\sin\theta$

(c) $ab\sin\theta$

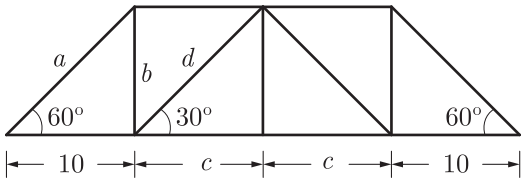
(d) $\frac{1}{2}ab\sin\theta$

Sol : www.cbse.site/ma/hm235

Direction For Question : (142-145)

A truss is a structure that consists of members organised into connected triangles so that the overall assembly behaves as a single object. Trusses are most commonly used in bridges, roofs and towers.

Consider the line diagram of truss shown below and find the following length :



142. What is the length a ?

(a) 30 m

(b) 20 m

(c) 34.6 m

(d) 17.32 m

Sol : www.cbse.site/ma/hm236

143. What is the length b ?

(a) 30 m

(b) 20 m

(c) 34.6 m

(d) 17.32 m

Sol : www.cbse.site/ma/hm236

144. What is the length c ?

(a) 30 m

(b) 20 m

(c) 34.6 m

(d) 17.32 m

Sol : www.cbse.site/ma/hm236

145. What is the length d ?

(a) 30 m

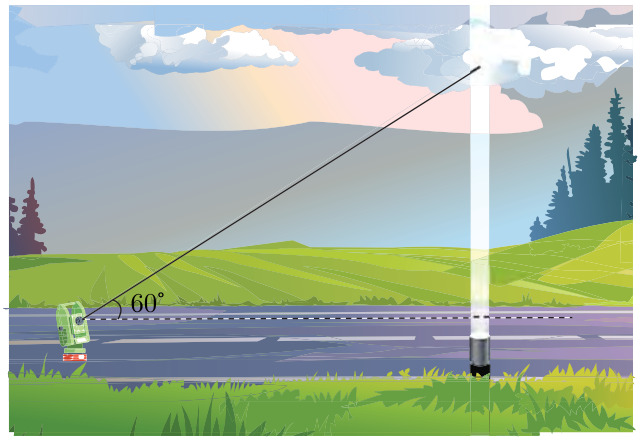
(b) 20 m

(c) 34.6 m

(d) 17.32 m

Sol : www.cbse.site/ma/hm236

146. Meteorologists find the height of a cloud using an instrument called a ceilometer. It consists of a light projector that directs a vertical light beam up to the cloud base and a light detector that scans the cloud to detect the light beam.



On July 2, 2021, at Midway Airport in Mumbai, a ceilometer was employed to find the height of the cloud cover. It was set up with its light detector 50 meter from its light projector. If the angle of elevation from the light detector to the base of the cloud was 60°, what was the height of the cloud cover?

(a) 140 m

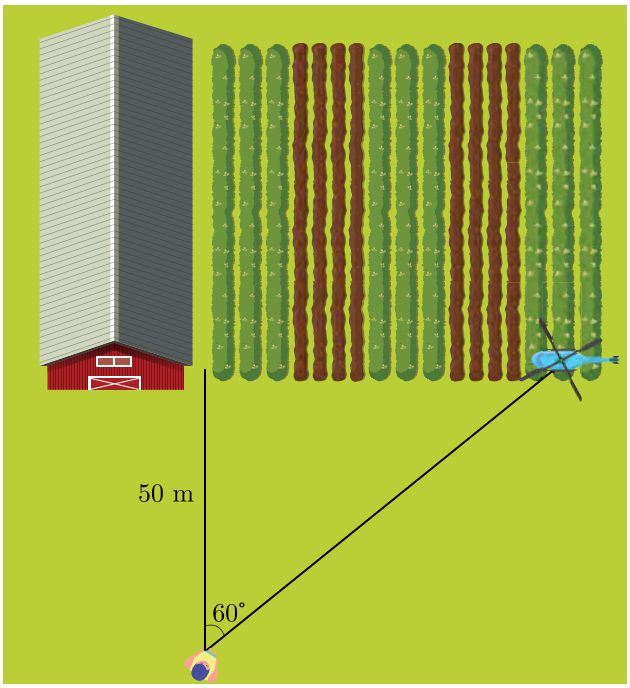
(b) 260 m

(c) 210 m

(d) 180 m

Sol : www.cbse.site/ma/hm237

147. While standing near the edge of a farmer's field, Vikram watches a crop duster dust the farmer's field for insect control. Curious as to the plane's speed during each drop, Vikram attempts an estimate using the angle of rotation from one end of the field to the other, while standing 50 meter from one corner.



Using a stopwatch he finds the plane makes each pass in 4.33 sec. If the angle of rotation was 60°, how fast is the plane flying as it applies the insecticide?

(a) 10 m/sec

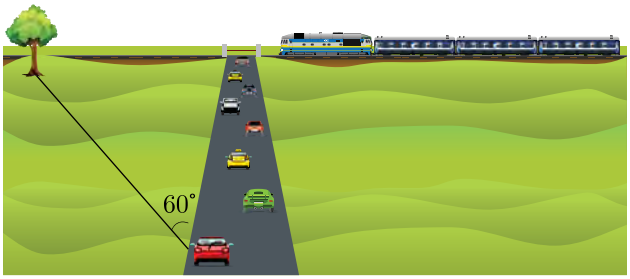
(b) 30 m/sec

(c) 15 m/sec

(d) 20 m/sec

Sol : www.cbse.site/ma/hm238

148. While driving to their next gig, Sarthak and the boys get stuck in a line of cars at a railroad crossing as the gates go down. As the sleek, speedy express train approaches, Sarthak decides to pass the time estimating its speed.



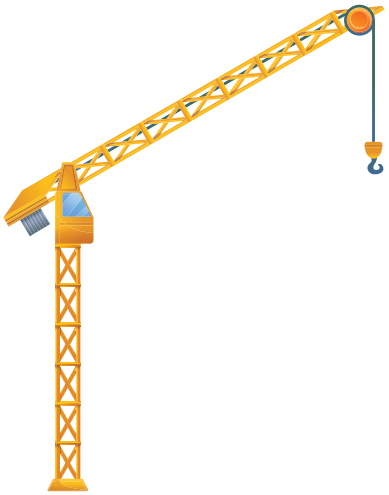
He spots a large oak tree beside the track some distance away, and figures the angle of rotation from the crossing to the tree is about 60°. If their car is 40 meter from the crossing and it takes the train 3 sec to reach the tree, how fast is the train moving ?

(a) 59.14 kmph
(b) 83.12 kmph
(c) 71.14 kmph
(d) 64.16 kmph

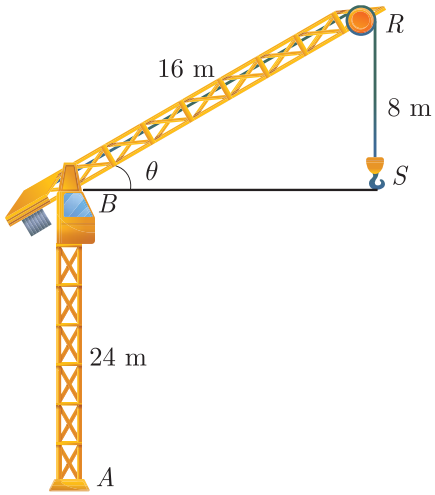
Sol : www.cbse.site/ma/hm239

Direction For Question : (149-153)

Tower cranes are a common fixture at any major construction site. They're pretty hard to miss -- they often rise hundreds of feet into the air, and can reach out just as far. The construction crew uses the tower crane to lift steel, concrete, large tools like acetylene torches and generators, and a wide variety of other building materials.



A crane stands on a level ground. It is represented by a tower AB, of height 24 m and a jib BR. The jib is of length 16 m and can rotate in a vertical plane about B. A vertical cable, RS, carries a load S. The diagram shows current position of the jib, cable and load.



149. What is the distance BS?
(a) $8\sqrt{3}$ m
(b) $4\sqrt{3}$ m
(c) $4\sqrt{2}$ m
(d) $8\sqrt{2}$ m

Sol : www.cbse.site/ma/hm240

150. What is the angle that the jib, BR, makes with the horizontal ?
(a) 45°
(b) 30°
(c) 60°
(d) 75°

Sol : www.cbse.site/ma/hm240

151. What is the measure of the angle BRS?
(a) 60°
(b) 75°
(c) 30°
(d) 45°

Sol : www.cbse.site/ma/hm240

152. Now the jib BR, has been rotated and the length RS is increased. The load is now on the ground at a point 8 m from A. What is the angle through which the jib has been rotated ?
(a) 15°
(b) 25°
(c) 30°
(d) 45°

Sol : www.cbse.site/ma/hm240

153. What is the length by which RS has been increased?

(a) $8\sqrt{3}$ m

(b) $8(\sqrt{3}+2)$ m

(c) $8(\sqrt{3}+1)$ m

(d) $4(\sqrt{3}+2)$ m

Sol : www.cbse.site/ma/hm240

SELF TEST QUESTIONS

154. $\dfrac{\cos^2(45^\circ+\theta)+\cos^2(45^\circ-\theta)}{\tan(60^\circ+\theta)\tan(30^\circ-\theta)} = ?$

(a) 1

(b) 2

(c) 3

(d) 4

Sol : www.cbse.site/ma/hm241

155. $\dfrac{\sin A-\cos A-1}{\sin A+\cos A-1} = ?$

(a) $\frac{1}{\sec A-\tan A}$

(b) $\frac{1}{\sec A+\tan A}$

(c) $\frac{\sec A}{\sec A+\tan A}$

(d) $\frac{\tan A}{\sec A+\tan A}$

Sol : www.cbse.site/ma/hm242

156. $2(\sin^6\theta+\cos^6\theta)-3(\sin^4\theta+\cos^4\theta)+1 = ?$

(a) 1

(b) 0

(c) 2

(d) –1

Sol : www.cbse.site/ma/hm243

157. $\dfrac{\tan^2 A}{\tan^2 A-1}+\dfrac{\operatorname{cosec}^2 A}{\sec^2 A-\operatorname{cosec}^2 A} = ?$

(a) $\frac{1}{1-2\cos^2 A}$

(b) $\frac{1}{1+2\cos^2 A}$

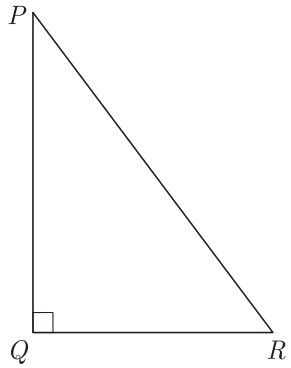
(c) $\frac{1}{1+2\sin^2 A}$

(d) $\frac{1}{1-2\sin^2 A}$

Sol : www.cbse.site/ma/hm244

158. In the given $\angle PQR$, right-angled at Q, $QR = 9$ cm and $PR - PQ = 1$ cm. The value of $\sin R + \cos R$.

will be



(a) $\frac{41}{49}$
(b) $\frac{49}{41}$
(c) $\frac{31}{39}$
(d) $\frac{39}{31}$

Sol : www.cbse.site/ma/hm245

159. If in a triangle ABC right angled at B, $AB = 6$ units and $BC = 8$ units, then the value of $\sin A \cos C + \cos A \sin C$ will be
(a) 1
(b) 2
(c) $\frac{1}{\sqrt{2}}$
(d) $\sqrt{2}$

Sol : www.cbse.site/ma/hm246

160. If $\cos(40^\circ + x) = \sin 30^\circ$, the value of x will be
(a) 20°
(b) 30°
(c) 40°
(d) 45°

Sol : www.cbse.site/ma/hm247

161. $\dfrac{5\cos^2 60^\circ + 4\cos^2 30^\circ - \tan^2 45^\circ}{\sin^2 30^\circ + \cos^2 60^\circ} = ?$
(a) $\frac{41}{49}$
(b) $\frac{13}{2}$
(c) $\frac{15}{2}$
(d) $\frac{15}{6}$

Sol : www.cbse.site/ma/hm248

162. $\sqrt{\dfrac{1-\cos\theta}{1+\cos\theta}}$ for $\theta = 60^\circ$ will be
(a) $\frac{2}{\sqrt{3}}$
(b) $\frac{1}{\sqrt{3}}$
(c) $\frac{1}{\sqrt{2}}$
(d) $\frac{3}{\sqrt{2}}$

Sol : www.cbse.site/ma/hm249

163. If $\tan A + \cot A = 2$, then the value of $\tan^2 A + \cot^2 A$ will be
(a) 1
(b) 2
(c) 4
(d) 6

Sol : www.cbse.site/ma/hm250

164. If $\cos\theta + \sin\theta = \sqrt{2}\cos\theta$, then $\cos\theta - \sin\theta = ?$
(a) $\sqrt{2}\sin\theta$
(b) $\sqrt{2}\cos\theta$
(c) $\frac{1}{\sqrt{2}}\sin\theta$
(d) $\frac{1}{\sqrt{2}}\cos\theta$

Sol : www.cbse.site/ma/hm251

165. $\dfrac{\cos A}{1-\tan A} + \dfrac{\sin A}{1-\cot A} = ?$
(a) $\sin A - \cos A$
(b) $\sin A + \cos A$
(c) $\cos A - \sin A$
(d) $-\sin A - \cos A$

Sol : www.cbse.site/ma/hm252

166. If $\sin(A+B) = 1$ and $\sin(A-B) = \frac{1}{2}$, $0 \le A + B < 90^o$ and $A > B$, then A will be
(a) 90°
(b) 45°
(c) 60°
(d) 30°

Sol : www.cbse.site/ma/hm253

167. $\dfrac{\sin 90^\circ}{\cos 45^\circ} + \dfrac{1}{\operatorname{cosec} 30^\circ}$ is equal to
(a) $\sqrt{2} + \frac{1}{2}$
(b) $2 + \frac{1}{\sqrt{2}}$

(c) $2+\sqrt{2}$
(d) $1+\sqrt{2}$

Sol : www.cbse.site/ma/hm254

168. If $\sqrt{2}\sin\theta = 1$, the value of $\sec^2\theta - \text{cosec}^2\theta$. will be
(a) 0
(b) 1
(c) $\frac{1}{2}$
(d) $\frac{1}{4}$

Sol : www.cbse.site/ma/hm255

169. If $4\cos\theta = 11\sin\theta$, the value of $\frac{11\cos\theta - 7\sin\theta}{11\cos\theta + 7\sin\theta}$ will be
(a) $\frac{93}{122}$
(b) $\frac{93}{149}$
(c) $\frac{29}{122}$
(d) $\frac{56}{149}$

Sol : www.cbse.site/ma/hm256

170. If $\tan(A+B) = \sqrt{3}$, $\tan(A-B) = \frac{1}{\sqrt{3}}$ $0^\circ < A+B \le 90^\circ$, then A will be
(a) 30°
(b) 45°
(c) 60°
(d) 90°

Sol : www.cbse.site/ma/hm257

171. If $\cos(A-B) = \frac{\sqrt{3}}{2}$ and $\sin(A+B) = \frac{\sqrt{3}}{2}$, where $(A+B)$ and $(A-B)$ are acute angles, the value of A is
(a) 45°
(b) 60°
(c) 30°
(d) 90°

Sol : www.cbse.site/ma/hm258

172. If $2\sin 2\theta = \sqrt{3}$, the value of $\cos 2\theta$, will be
(a) 1
(b) $\frac{1}{\sqrt{2}}$
(c) $\frac{1}{2}$
(d) $\frac{\sqrt{3}}{2}$

Sol : www.cbse.site/ma/hm259

173. The value of $\sin 30^\circ \cos 60^\circ + \cos 30^\circ \sin 60^\circ$ will be
(a) 2
(b) 1
(c) $\frac{1}{\sqrt{3}}$
(d) $2\sqrt{2}$

Sol : www.cbse.site/ma/hm260

174. If $\sqrt{3}\sin\theta - \cos\theta = 0$ and $0^\circ < \theta < 90^\circ$, the value of θ. will be
(a) 30°
(b) 45°
(c) 60°
(d) 90°

Sol : www.cbse.site/ma/hm261

175. $\frac{\cos 45^\circ}{\sec 30^\circ} + \frac{1}{\sec 60^\circ} = ?$
(a) $\frac{\sqrt{3}}{2} + \frac{1}{4}$
(b) $\frac{\sqrt{3}}{4} + \frac{1}{2}$
(c) $\frac{\sqrt{3}}{4} + \frac{1}{4}$
(d) $\frac{\sqrt{6}}{4} + \frac{1}{2}$

Sol : www.cbse.site/ma/hm262

176. If $x = a\,\text{cosec}\,\theta, y = b\cot\theta$ then $b^2x^2 - a^2y^2$ equal to
(a) $\frac{a^2+b^2}{a^2b^2}$
(b) $\frac{a^2b^2}{a^2+b^2}$
(c) $\frac{a^2b^2}{a+b}$
(d) a^2b^2

Sol : www.cbse.site/ma/hm263

177. If $\text{cosec}\,\theta - \cot\theta = \sqrt{2}\cot\theta$, then $\text{cosec}\,\theta + \cot\theta$ is equal to
(a) $2\sin\theta$
(b) $\sin\theta$
(c) $\text{cosec}\,\theta$
(d) $\sqrt{2}\,\text{cosec}\,\theta$

Sol : www.cbse.site/ma/hm264

178. $\frac{\cot^3\theta\sin^3\theta}{(\cos\theta+\sin\theta)^2} + \frac{\tan^3\theta\cos^3\theta}{(\cos\theta+\sin\theta)^2} = ?$

(a) $\frac{\sec\theta+1}{\sec\theta-1}$
(b) $\frac{\sec\theta-1}{\sec\theta+1}$
(c) $\frac{\operatorname{cosec}\theta\sec\theta-1}{\operatorname{cosec}\theta+\sec\theta}$
(d) $\frac{1-\sec\theta}{1+\sec\theta}$

Sol : www.cbse.site/ma/hm265

179. $\sqrt{\frac{\sec\theta-1}{\sec\theta+1}}+\sqrt{\frac{\sec\theta+1}{\sec\theta-1}}=?$

(a) $2\sin\theta$
(b) $\sin\theta$
(c) $\operatorname{cosec}\theta$
(d) $2\operatorname{cosec}\theta$

Sol : www.cbse.site/ma/hm266

180. $\frac{\tan\theta+\sin\theta}{\tan\theta-\sin\theta}=?$

(a) $\frac{\sec\theta+1}{\sec\theta-1}$
(b) $\frac{\sec\theta-1}{\sec\theta+1}$
(c) $\frac{1+\sec\theta}{1-\sec\theta}$
(d) $\frac{1-\sec\theta}{1+\sec\theta}$

Sol : www.cbse.site/ma/hm267

181. $\frac{\operatorname{cosec}A}{\operatorname{cosec}A-1}+\frac{\operatorname{cosec}A}{\operatorname{cosec}A+1}=?$

(a) $2\cos^2 A$
(b) $2\sin^2 A$
(c)
(d) $2\cot^2 A$

Sol : www.cbse.site/ma/hm268

182. If $\operatorname{cosec}\theta+\cot\theta=p$, then $\frac{p^2-1}{p^2+1}=?$

(a) $\sin\theta$
(b) $\cos\theta$
(c) $\tan\theta$
(d) $\cot\theta$

Sol : www.cbse.site/ma/hm269

183. If $a\cos\theta+b\sin\theta=m$ and $a\sin\theta-b\cos\theta=n$, then m^2+n^2 will be equal to

(a) a^2+b^2
(b) $(a+b)^2$
(c) $(a-b)^2$
(d) a^2-b^2

Sol : www.cbse.site/ma/hm270

184. $\frac{\cos^2\theta}{1-\tan\theta}+\frac{\sin^3\theta}{\sin\theta-\cos\theta}=?$

(a) $1+\sec\theta\operatorname{cosec}\theta$
(b) $1+\sin\theta\sec\theta$
(c) $1+\cos\theta\operatorname{cosec}\theta$
(d) $1+\sin\theta\cos\theta$

Sol : www.cbse.site/ma/hm271

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CHAPTER 7

AREAS RELATED TO CIRCLES

1. The area of a circular ring formed by two concentric circles whose radii are 5.7 cm and 4.3 cm respectively is (Take $\pi = 3.1416$)

(a) 44 sq. cm.

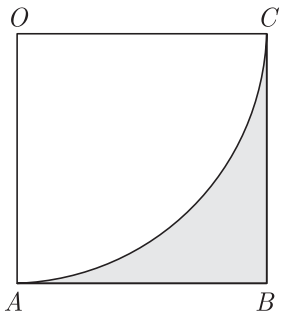
(b) 66 sq. cm.

(c) 22 sq. cm.

(d) 33 sq. cm.

Sol : www.cbse.site/ma/lm101

2. In the adjoining figure, $OABC$ is a square of side 7 cm. OAC is a quadrant of a circle with O as centre. The area of the shaded region is



(a) $10.5\ \text{cm}^2$

(b) $38.5\ \text{cm}^2$

(c) $49\ \text{cm}^2$

(d) $11.5\ \text{cm}^2$

Sol : www.cbse.site/ma/lm102

3. A sector is cut from a circular sheet of radius 100 cm, the angle of the sector being 240°. If another circle of the area same as the sector is formed, then radius of the new circle is

(a) 79.5 cm

(b) 81.5 cm

(c) 83.4 cm

(d) 88.5 cm

Sol : www.cbse.site/ma/lm103

4. If a circular grass lawn of 35 m in radius has a path 7 m wide running around it on the outside, then the area of the path is

(a) $1450\ \text{m}^2$

(b) $1576\ \text{m}^2$

(c) $1694\ \text{m}^2$

(d) $3368\ \text{m}^2$

Sol : www.cbse.site/ma/lm104

5. If the area of a semi-circular field is 15400 sq m, then perimeter of the field is

(a) $160\sqrt{2}\ \text{m}$

(b) $260\sqrt{2}\ \text{m}$

(c) $360\sqrt{2}\ \text{m}$

(d) $460\sqrt{2}\ \text{m}$

Sol : www.cbse.site/ma/lm105

6. The area of the circle that can be inscribed in a square of side 6 cm is

(a) $36\pi\ \text{cm}^2$

(b) $18\pi\ \text{cm}^2$

(c) $12\pi\ \text{cm}^2$

(d) $9\pi\ \text{cm}^2$

Sol : www.cbse.site/ma/lm106

7. The sum of the areas of two circle, which touch each other externally, is $153\,\pi$. If the sum of their radii is 15, then the ratio of the larger to the smaller radius is

(a) 4 : 1

(b) 2 : 1

(c) 3 : 1

(d) None of these

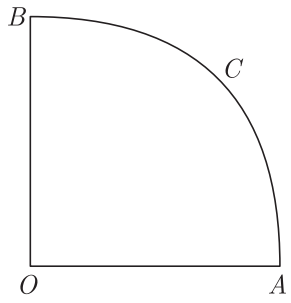
Sol : www.cbse.site/ma/lm107

8. A race track is in the form of a ring whose inner

and outer circumference are 437 m and 503 m respectively. The area of the track is
(a) 66 sq. cm.
(b) 4935 sq. cm.
(c) 9870 sq. cm
(d) None of these

Sol : www.cbse.site/ma/lm108

9. In the given figure, $OACB$ is a quadrant of a circle of radius 7 cm. The perimeter of the quadrant is



(a) 11 cm
(b) 18 cm
(c) 25 cm
(d) 36 cm

Sol : www.cbse.site/ma/lm109

10. If the circumference of a circle increases from 4π to 8π, then its area is
(a) halved
(b) doubled
(c) tripled
(d) quadrupled

Sol : www.cbse.site/ma/lm110

11. If the radius of a circle is diminished by 10%, then its area is diminished by
(a) 10%
(b) 19%
(c) 36%
(d) 20%

Sol : www.cbse.site/ma/lm111

12. If the perimeter of a semi-circular protractor is 36 cm, then its diameter is
(a) 10 cm
(b) 14 cm
(c) 12 cm
(d) 16 cm

Sol : www.cbse.site/ma/lm112

13. The area of a circular path of uniform width d surrounding a circular region of radius r is
(a) $\pi d(2r+d)$
(b) $\pi(2r+d)r$
(c) $\pi(d+r)r$
(d) $\pi(d+r)d$

Sol : www.cbse.site/ma/lm113

14. In a circle of radius 14 cm, an arc subtends an angle of 45° at the centre, then the area of the sector is
(a) $71\ \text{cm}^2$
(b) $76\ \text{cm}^2$
(c) $77\ \text{cm}^2$
(d) $154\ \text{cm}^2$

Sol : www.cbse.site/ma/lm114

15. If the sum of the areas of two circles with radii R_1 and R_2 is equal to the area of a circle of radius R, then
(a) $R_1+R_2=R$
(b) $R_1^2+R_2^2=R^2$
(c) $R_1+R_2<R$
(d) $R_1^2+R_2^2<R^2$

Sol : www.cbse.site/ma/lm115

16. If the sum of the circumferences of two circles with radii R_1 and R_2 is equal to the circumference of a circle of radius R, then
(a) $R_1+R_2=R$
(b) $R_1+R_2>R$
(c) $R_1+R_2>R$
(d) $R_1+R_2<R$

Sol : www.cbse.site/ma/lm116

17. If the circumference of a circle and the perimeter of

a square are equal, then

(a) Area of the circle = Area of the square

(b) Area of the circle > Area of the square

(c) Area of the circle < Area of the square

(d) Nothing definite can be said about the relation between the areas of the circle and square

Sol : www.cbse.site/ma/lm117

18. If the perimeter of a circle is equal to that of a square, then the ratio of their areas is

(a) 22:7

(b) 14:11

(c) 7:22

(d) 11:14

Sol :

Sol : www.cbse.site/ma/lm118

19. It is proposed to build a single circular park equal in area to the sum of areas of two circular parks of diameters 16 m and 12 m in a locality. The radius of the new park would be

(a) 10 m

(b) 15 m

(c) 20 m

(d) 24 m

Sol : www.cbse.site/ma/lm119

20. The radius of a circle whose circumference is equal to the sum of the circumferences of the two circles of diameters 36 cm and 20 cm is

(a) 56 cm

(b) 42 cm

(c) 28 cm

(d) 16 cm

Sol : www.cbse.site/ma/lm120

21. The area of the square that can be inscribed in a circle of radius 8 cm is

(a) 256 cm^2

(b) 128 cm^2

(c) $64\sqrt{2}$ cm^2

(d) 64 cm^2

Sol : www.cbse.site/ma/lm121

22. The diameter of a circle whose area is equal to the sum of the areas of the two circles of radii 24 cm and 7 cm is

(a) 31 cm

(b) 25 cm

(c) 62 cm

(d) 50 cm

Sol : www.cbse.site/ma/lm122

23. **Assertion :** In a circle of radius 6 cm, the angle of a sector 60°. Then the area of the sector is $18\frac{6}{7}$ cm^2.

Reason : Area of the circle with radius r is πr^2.

(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

(c) Assertion (A) is true but reason (R) is false.

(d) Assertion (A) is false but reason (R) is true.

Sol : www.cbse.site/ma/lm123

24. **Assertion :** If the circumference of a circle is 176 cm, then its radius is 28 cm.

Reason : Circumference = $2\pi \times$ radius

(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

(c) Assertion (A) is true but reason (R) is false.

(d) Assertion (A) is false but reason (R) is true.

Sol : www.cbse.site/ma/lm124

25. **Assertion :** If the outer and inner diameter of a circular path is 10 m and 6 m then area of the path is $16\pi\ m^2$.

Reason : If R and r be the radius of outer and inner circular path, then area of path is $\pi(R^2 - r^2)$.

(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of

assertion (A).

(c) Assertion (A) is true but reason (R) is false.

(d) Assertion (A) is false but reason (R) is true.

Sol : www.cbse.site/ma/lm125

26. **Assertion :** If a wire of length 22 cm is bent in the shape of a circle, then area of the circle so formed is $40\ cm^2$.

Reason : Circumference of the circle = length of the wire.

(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

(c) Assertion (A) is true but reason (R) is false.

(d) Assertion (A) is false but reason (R) is true.

Sol : www.cbse.site/ma/lm126

27. The radii of two circles are 19 cm and 9 cm respectively. What is the radius of a circle of a circle which has circumference equal to sum of their circumferences.

(a) 14 cm

(b) 28 cm

(c) 56 cm

(d) 32 cm

Sol : www.cbse.site/ma/lm127

28. The minute hand of a clock is 12 cm long. What is the area of the face of the clock described by the minute hand in 35 minutes.

(a) $148\ cm^2$

(b) $264\ cm^2$

(c) $132\ cm^2$

(d) $198\ cm^2$

Sol : www.cbse.site/ma/lm128

29. The radius of a circle is 17.5 cm. What is the area of the sector of the circle enclosed by two radii and an arc 44 cm in length ?

(a) 190 sq cm

(b) 770 sq cm

(c) 385 sq cm

(d) 225 sq cm

Sol : www.cbse.site/ma/lm129

30. What is the area of the sector of a circle of radius 6 cm whose central angle is $30°$? (Take $\pi = 3.14$)

(a) $9.42\ cm^2$

(b) $18.84\ cm^2$

(c) $6.32\ cm^2$

(d) $12.64\ cm^2$

Sol : www.cbse.site/ma/lm130

31. What is the perimeter of the sector with radius 10.5 cm and sector angle 60^o?

(a) 48 cm

(b) 96 cm

(c) 64 cm

(d) 32 cm

Sol : www.cbse.site/ma/lm131

32. If the circumferences of two concentric circles forming a ring are 88 cm and 66 cm respectively, the width of the ring will be

(a) 7 cm

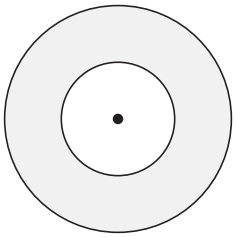
(b) 3.5 cm

(c) 7π cm

(d) 3π cm

Sol : www.cbse.site/ma/lm132

33. Two coins of diameter 2 cm and 4 cm respectively are kept one over the other as shown in the figure, what is the area of the shaded ring shaped region in square cm?



(a) 3π sq cm

(b) 6π sq cm

(c) 3 sq cm

(d) 6 sq cm

Sol : www.cbse.site/ma/lm133

34. The diameter of two circle with centre A and B are 16 cm and 30 cm respectively. If area of another circle with centre C is equal to the sum of areas of these two circles, the circumference of the circle with centre C will be

(a) 17π cm

(b) 90π cm

(c) 34π cm

(d) 45π cm

Sol : www.cbse.site/ma/lm134

35. If diameter of a wheel is 1.26 m, what the distance covered in 500 revolutions?

(a) 1.38 km

(b) 4.64 km

(c) 2.46 km

(d) 1.98 km

Sol : www.cbse.site/ma/lm135

36. What is the area of the largest square that can be inscribed in a circle of radius 12 cm.?

(a) 144 cm^2

(b) 288 cm^2

(c) 132 cm^2

(d) 264 cm^2

Sol : www.cbse.site/ma/lm136

37. What is the perimeter of a sector of a circle whose central angle is 90° and radius is 7 cm?

(a) 50π cm

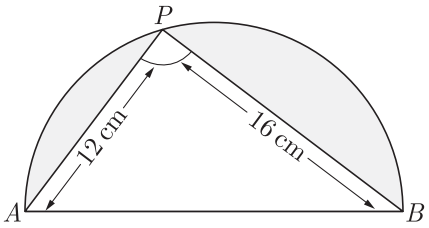
(b) 25π cm

(c) 50 cm

(d) 25 cm

Sol : www.cbse.site/ma/lm137

38. In the given figure, AB is the diameter where $AP = 12$ cm and $PB = 16$ cm. If the value of π is taken 3, what is the perimeter of the shaded region?



(a) 58 cm

(b) 116 cm

(c) 29 cm

(d) 156 cm

Sol : www.cbse.site/ma/lm138

39. What is the area of circle that can be inscribed in a square of side 10 cm?

(a) 25π cm^2

(b) 50π cm^2

(c) 25 cm^2

(d) 50 cm^2

Sol : www.cbse.site/ma/lm139

40. A thin wire is in the shape of a circle of radius 77 cm. It is bent into a square. What is the side of the square ($\pi = \frac{22}{7}$)?

(a) 168 cm

(b) 242 cm

(c) 121 cm

(d) 336 cm

Sol : www.cbse.site/ma/lm140

41. What is the diameter of a circle whose area is equal to the sum of the areas of two circles of radii 40 cm and 9 cm?

(a) 82 cm

(b) 41 cm

(c) 62 cm

(d) 31 cm

Sol : www.cbse.site/ma/lm141

42. If the perimeter and the area of the circle are

numerically equal, what is the radius of the circle?
(a) 1
(b) 2
(c) 4
(d) 8

Sol : www.cbse.site/ma/lm142

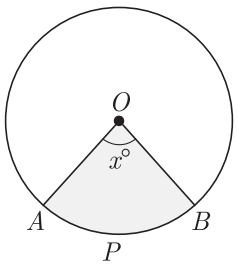
43. What is the area of the circle that can be inscribed in a square of side 8 cm?
(a) 32π cm^2
(b) 16π cm^2
(c) 21π cm^2
(d) 42π cm^2

Sol : www.cbse.site/ma/lm143

44. If the radius of a circle is doubled, what about its area?
(a) Area is 2 times
(b) Area is 4 times
(c) Area is half
(d) does not change

Sol : www.cbse.site/ma/lm144

45. In given fig., O is the centre of a circle. If the area of the sector $OAPB$ is $\frac{5}{36}$ times the area of the circle, what is the value of x.



(a) 50°
(b) 60°
(c) 70°
(d) 80°

Sol : www.cbse.site/ma/lm145

46. What is the area of the square that can be inscribed in a circle of radius 8 cm?
(a) 392 cm^2
(b) 128 cm^2
(c) 256 cm^2
(d) 196 cm^2

Sol : www.cbse.site/ma/lm146

47. A paper is in the form of a rectangle $ABCD$ in which $AB = 20$ cm, $BC = 14$ cm. A semi-circular portion with BC as diameter is cut off. What is the area of the part? Use $\pi = \frac{22}{7}$.
(a) 293 cm^2
(b) 203 cm^2
(c) 406 cm^2
(d) 486 cm^2

Sol : www.cbse.site/ma/lm147

48. If the difference between the circumference and the radius of a circle is 37 cm, then using $\pi = \frac{22}{7}$, what is the circumference of the circle?
(a) 44π cm
(b) 44 cm
(c) 22 cm
(d) 22π cm

Sol : www.cbse.site/ma/lm148

49. Two circular pieces of equal radii and maximum areas, touching each other are cut out from a rectangular cardboard of dimensions 14 cm $\times$ 7 cm. What is the area of the remaining cardboard? (Use $\pi = \frac{22}{7}$)
(a) 21π cm^2
(b) 21 cm^2
(c) 42π cm^2
(d) 42 cm^2

Sol : www.cbse.site/ma/lm149

50. The diameters of the front and rear wheels of a tractor are 80 cm and 200 cm respectively. What is the number of revolutions of rear wheel to cover the distance which the front wheel covers in 800 revolutions?
(a) 320
(b) 420
(c) 820

(d) 640

Sol : www.cbse.site/ma/lm150

51. What is the area of minor segment of a circle of radius 14 cm, when its centre angle is 60°. Also What is the area of corresponding major segment? Use $\pi = \frac{22}{7}$.

(a) 598 cm^2

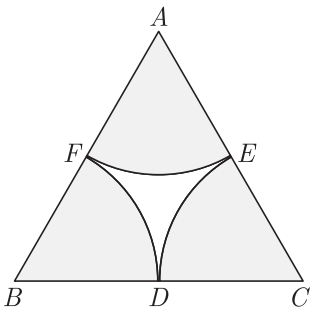
(b) 492 cm^2

(c) 693 cm^2

(d) 765 cm^2

Sol : www.cbse.site/ma/lm151

52. In given figure arcs are drawn by taking vertices A, B and C of an equilateral triangle of side 10 cm, to intersect the side BC, CA and AB at their respective mid-points D, E and F. What is the area of the shaded region? (Use $\pi = 3.14$).



(a) 180 cm^2

(b) 260 cm^2

(c) 39.25 cm^2

(d) 79.5 cm^2

Sol : www.cbse.site/ma/lm152

53. If the perimeter of a protractor is 72 cm, what is its area? Use $\pi = \frac{22}{7}$

(a) 616 cm^2

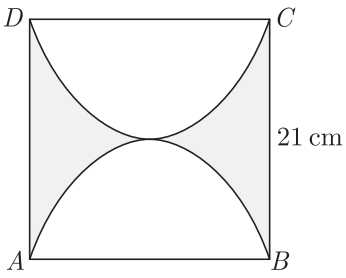
(b) 308 cm^2

(c) 412 cm^2

(d) 824 cm^2

Sol : www.cbse.site/ma/lm153

54. What is the perimeter of the shaded region if $ABCD$ is a square of side 21 cm and APB and CPD are semicircle. Use $\pi = \frac{22}{7}$?



(a) 108 cm

(b) 216 cm

(c) 432 cm

(d) 96 cm

Sol : www.cbse.site/ma/lm154

55. What is the area of the corresponding major sector of a circle of radius 28 cm and the central angle 45°?

(a) 4312 cm^2

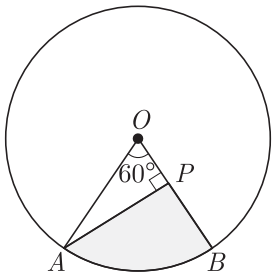
(b) 2156 cm^2

(c) 1256 cm^2

(d) 3412 cm^2

Sol : www.cbse.site/ma/lm155

56. In the given figure, AOB is a sector of angle 60° of a circle with centre O and radius 17 cm. If $AP \perp OB$ and $AP = 15$ cm, what is the area of the shaded region?



(a) 60.5 cm^2

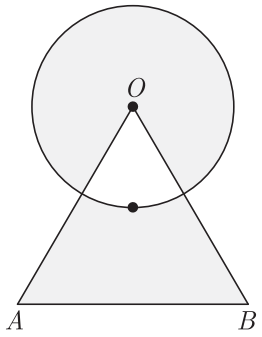
(b) 126 cm^2

(c) 91.4 cm^2

(d) 78 cm^2

Sol : www.cbse.site/ma/lm156

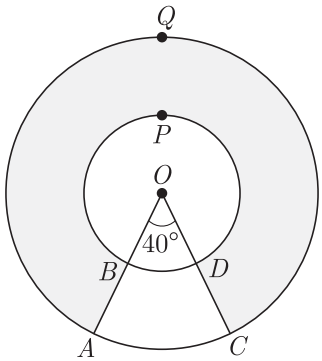
57. What is the area of shaded region shown in the given figure? Here a circular arc of radius 6 cm has been drawn with vertex O of an equilateral triangle OAB of side 12 cm as centre.



(a) $12\sqrt{3}+\frac{142}{7}$
(b) $24\sqrt{3}-\frac{142}{7}$
(c) $36\sqrt{3}+\frac{528}{7}$
(d) $24\sqrt{3}+\frac{142}{7}$

Sol : www.cbse.site/ma/lm157

58. In the given figure, what is the area of the shaded region, enclosed between two concentric circles of radii 7 cm and 14 cm where $\angle AOC = 40°$? Use $\pi = \frac{22}{7}$.



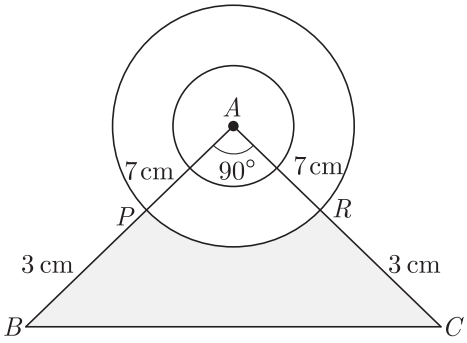
(a) 165 cm^2
(b) 189 cm^2
(c) 210 cm^2
(d) 411 cm^2

Sol : www.cbse.site/ma/lm158

59. The circumference of a circle exceeds the diameter by 16.8 cm. What is the radius of the circle? Use $\pi = \frac{22}{7}$.
(a) 6.4 cm
(b) 3.92 cm
(c) 9.32 cm
(d) 7.31 cm

Sol : www.cbse.site/ma/lm159

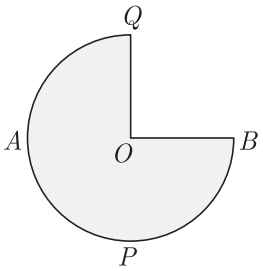
60. A momento is made as shown in the figure. Its base $PBCR$ is silver plate from the front side. What is the area which is silver plated. Use $\pi = \frac{22}{7}$.



(a) 18 cm^2
(b) 23 cm^2
(c) 11.5 cm^2
(d) 29 cm^2

Sol : www.cbse.site/ma/lm160

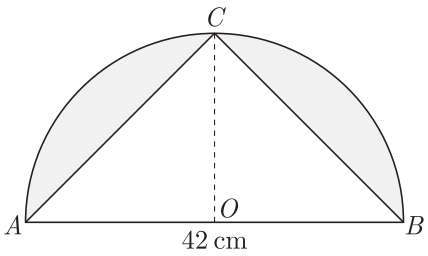
61. In given figure APB and AQP are semi-circle, and $AO = OB$. If the perimeter of the figure is 47 cm, what is the area of the shaded region? Use $\pi = \frac{22}{7}$.



(a) 231 cm^2
(b) 155.5 cm^2
(c) 55.5 cm^2
(d) 111 cm^2

Sol : www.cbse.site/ma/lm161

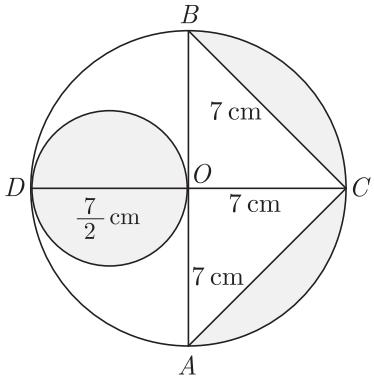
62. In the figure, ΔACB is in the semi-circle. What is the area of shaded region given that $AB = 42$ cm?



(a) 204 cm^2
(b) 224 cm^2
(c) 244 cm^2
(d) 252 cm^2

Sol : www.cbse.site/ma/lm162

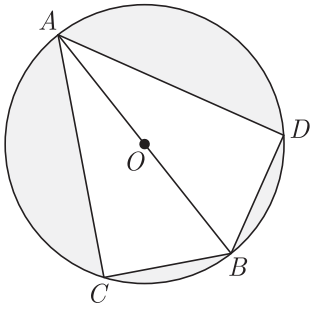
63. In the given figure AB and CD are two diameters of a circle perpendicular to each other and OD is the diameter of the smaller circle. If $OA = 7$ cm, what is the area of the shaded region?



(a) 133 cm^2
(b) 66.5 cm^2
(c) 76 cm^2
(d) 108 cm^2

Sol : www.cbse.site/ma/lm163

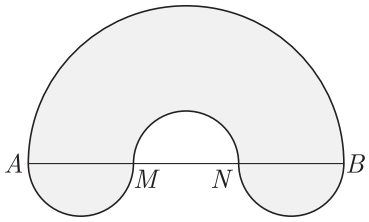
64. What is the area of the shaded region in figure, if $BC = BD = 8$ cm, $AC = AD = 15$ cm and O is the centre of the circle? (Take $\pi = 3.14$)



(a) 107 cm^2
(b) 210 cm^2
(c) 198 cm^2
(d) 220 cm^2

Sol : www.cbse.site/ma/lm164

65. In the given figure, AB is the diameter of the largest semi-circle. $AB = 21$ cm, $AM = MN = NB$. Semi-circle are drawn with AM, MN and NB as shown. What is the area of the shaded region? Use $\pi = \frac{22}{7}$

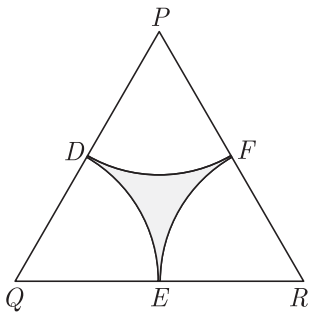


(a) 105 cm^2
(b) 210.5 cm^2
(c) 192.5 cm^2
(d) 225 cm^2

Sol : www.cbse.site/ma/lm165

66. In the given figure, ΔPQR is an equilateral triangle of side 8 cm and D, E, F are centres of circular arcs, each of radius 4 cm. What is the area of shaded

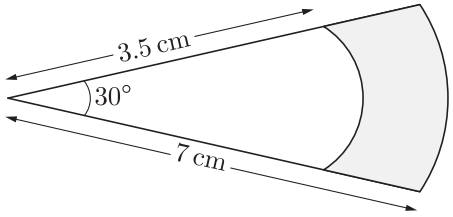
region. (Use $\pi = 3.14$) and $\sqrt{3} = 1.732$



(a) $6.8\ \text{cm}^2$
(b) $8.4\ \text{cm}^2$
(c) $4.8\ \text{cm}^2$
(d) $2.6\ \text{cm}^2$

Sol : www.cbse.site/ma/lm166

67. In the given figure sectors of two concentric circles of radii 7 cm and 3.5 cm are given. What is the area of shaded region? Use $\pi = \frac{22}{7}$.



(a) $9.62\ \text{cm}^2$
(b) $18.14\ \text{cm}^2$
(c) $21.34\ \text{cm}^2$
(d) $11.68\ \text{cm}^2$

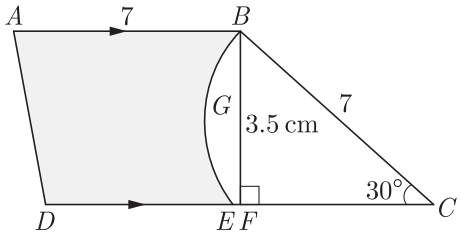
Sol : www.cbse.site/ma/lm167

68. A wire when bent in the form of an equilateral triangle encloses an area of $121\sqrt{3}$ cm^2. If the wire is bent in the form of a circle, what is the area enclosed by the circle? Use $\pi = \frac{22}{7}$.

(a) $246.5\ \text{cm}^2$
(b) $620.5\ \text{cm}^2$
(c) $921.5\ \text{cm}^2$
(d) $346.5\ \text{cm}^2$

Sol : www.cbse.site/ma/lm168

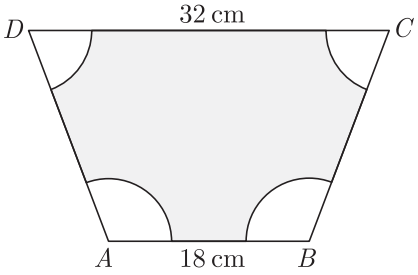
69. Adjoining fig, $ABCD$ is a trapezium with $AB \,||\, DC$ and $\angle BCD = 30°$. Fig. $BGEC$ is a sector of a circle with centre C and $AB = BC = 7$ cm, $DE = 4$ cm and $BF = 3.5$ cm, then What is the area of the shaded region? Use $\pi = \frac{22}{7}$.



(a) $24.67\ \text{cm}^2$
(b) $12.34\ \text{cm}^2$
(c) $28.14\ \text{cm}^2$
(d) $18.67\ \text{cm}^2$

Sol : www.cbse.site/ma/lm169

70. In the given figure $ABCD$ is a trapezium with $AB \,||\, DC, AB = 18$ cm and $DC = 32$ cm and the distance between AB and AC is 14 cm. If arcs of equal radii 7 cm taking A, B, C and D have been drawn, then what is the area of the shaded region?

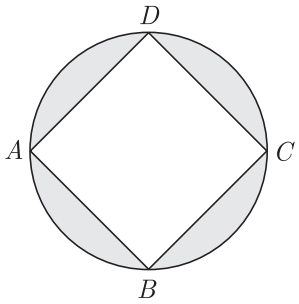


(a) $92\ \text{cm}^2$
(b) $252\ \text{cm}^2$
(c) $196\ \text{cm}^2$
(d) $310\ \text{cm}^2$

Sol : www.cbse.site/ma/lm170

71. In given figure, $ABCD$ is a square with side $2\sqrt{2}$ cm and inscribed in a circle. What is the area of the

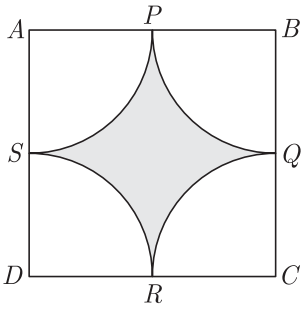
shaded region? (Use $\pi = 3.14$).



(a) 9.2 cm^2
(b) 4.6 cm^2
(c) 12.4 cm^2
(d) 8.4 cm^2

Sol : www.cbse.site/ma/lm171

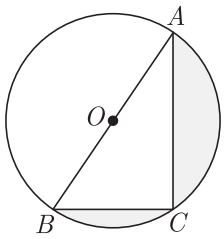
72. In given figure arcs drawn with centres A, B, C and D intersect in pairs at midpoint P, Q, R and S of the sides AB, BC, CD and DA respectively of a square $ABCD$ of side 12 cm. What is the area of the shaded region? [Use $\pi = 3.14$]



(a) 42 cm^2
(b) 62 cm^2
(c) 31 cm^2
(d) 56 cm^2

Sol : www.cbse.site/ma/lm172

73. In the given figure, O is the centre of circle such that diameter $AB = 13$ cm and $AC = 12$cm. BC is joined. What is the area of the shaded region. ($\pi = 3.14$)



(a) 28.4 cm^2
(b) 42.4 cm^2
(c) 36.3 cm^2
(d) 52.4 cm^2

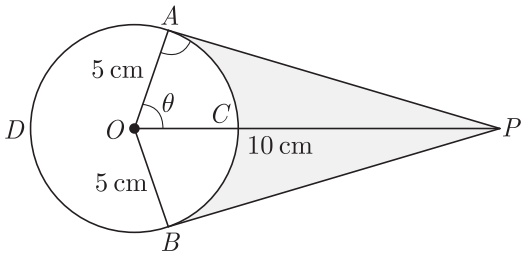
Sol : www.cbse.site/ma/lm173

74. Four equal circles are described at the four corners of a square so that each touches two of the others. The shaded area enclosed between the circle is $\frac{24}{7}$ cm^2. What is the radius of each circle?

(a) 2 cm
(b) 4 cm
(c) 6 cm
(d) 1 cm

Sol : www.cbse.site/ma/lm174

75. An elastic belt is placed around the rim of a pulley of radius 5 cm. From one point C on the belt elastic belt is pulled directly away from the centre O of the pulley until it is at P, 10 cm from the point O. What is the length of the belt that is still in contact with the pulley.(Use $\pi = 3.14$ and $\sqrt{3} = 1.73$)



(a) 21 cm^2
(b) 34 cm^2
(c) 28 cm^2
(d) 32 cm^2

Sol : www.cbse.site/ma/lm175

76. In previous question what is the shaded area?

(a) 17 cm^2

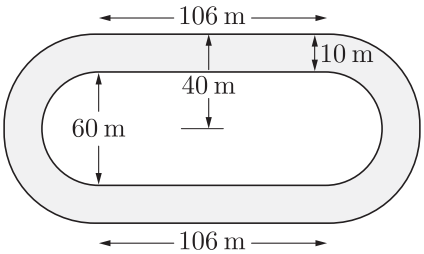
(b) 34 cm^2

(c) 25 cm^2

(d) 39 cm^2

Sol : www.cbse.site/ma/lm175

77. Given figure depicts a racing track whose left and right ends are semi-circular. The distance between the two inner parallel line segments is 60 m and they are each 106 m long. If the track is 10 m wide everywhere, what is the area of the track?



(a) 3260 m^2

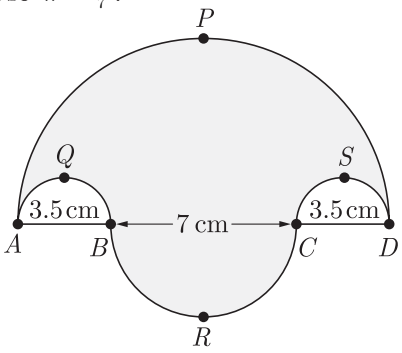
(b) 1630 m^2

(c) 3390 m^2

(d) 2490 m^2

Sol : www.cbse.site/ma/lm176

78. In the given figure $\overset{\frown}{APD}, \overset{\frown}{AQB}, \overset{\frown}{BRC}$ and $\overset{\frown}{CSD}$, are semi-circles of diameter 14 cm, 3.5 cm, 7 cm and 3.5 cm respectively. What is the area of the shaded region? Use $\pi = \frac{22}{7}$.



(a) 98.8 cm^2

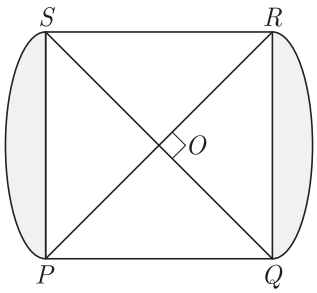
(b) 86.6 cm^2

(c) 78.4 cm^2

(d) 50.6 cm^2

Sol : www.cbse.site/ma/lm177

79. In figure, $PQRS$ is square lawn with side PQ = 42 metre. Two circular flower beds are there on the sides PS and QR with centre at O, the intersection of its diagonals. What is the total area of the two flower beds (shaded parts)?



(a) 252 m^2

(b) 504 m^2

(c) 298 m^2

(d) 596 m^2

Sol : www.cbse.site/ma/lm178

80. Two circular beads of different sizes are joined together such that the distance between their centres is 14 cm. If sum of their areas is 130π cm^2, what is the radius of each bead?

(a) 2 cm

(b) 3 cm

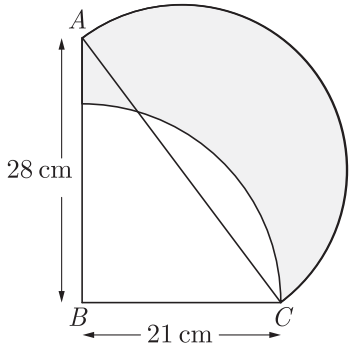
(c) 4 cm

(d) 5 cm

Sol : www.cbse.site/ma/lm179

81. In the fig., ABC is a right-angle triangle, $\angle B = 90°$, $AB = 28$ cm and $BC = 21$ cm. With AC as diameter, a semi-circle is drawn and with BC as radius a quarter circle is drawn. What is the area of

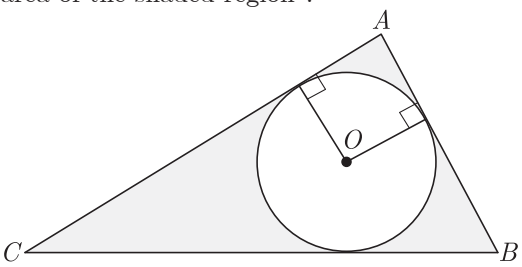
the shaded region?



(a) 596.75 cm^2
(b) 428.75 cm^2
(c) 520.75 cm^2
(d) 496.75 cm^2

Sol : www.cbse.site/ma/lm180

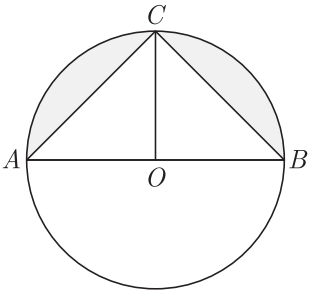
82. In the figure, ABC is a right angled triangle right angled at $\angle A$. if $AB = 6$ cm, $BC = 10$ cm and O is the centre of the circle of the triangle ABC, what is the area of the shaded region ?



(a) 22.6 cm^2
(b) 18.9 cm^2
(c) 11.5 cm^2
(d) 11.43 cm^2

Sol : www.cbse.site/ma/lm181

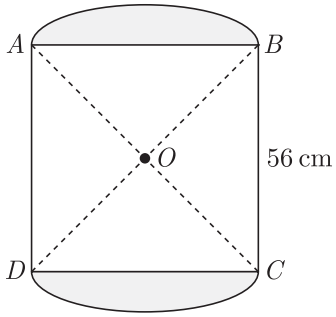
83. A round thali has 2 inbuilt triangular for serving vegetables and a separate semi-circular area for keeping rice or chapati. If radius of thali is 21 cm, what is the area of the thali that is shaded in the figure?



(a) 148 cm^2
(b) 296 cm^2
(c) 126 cm^2
(d) 252 cm^2

Sol : www.cbse.site/ma/lm182

84. In given figure two circular flower beds have been shown on two sides of a square lawn $ABCD$ of side 56 m. If the centre of each circular flower bed is the point of intersection O of the diagonals of the square lawn, what is the sum of the areas of the lawn and flower beds?

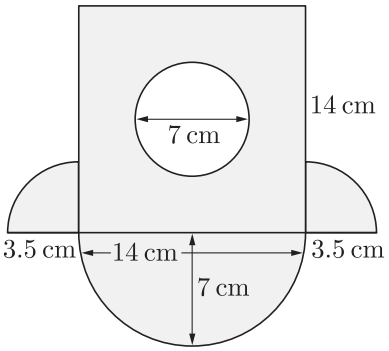


(a) 1016 m^2
(b) 3014 m^2
(c) 4032 m^2
(d) 2016 m^2

Sol : www.cbse.site/ma/lm183

85. In fig., what is the area of the shaded region? Use

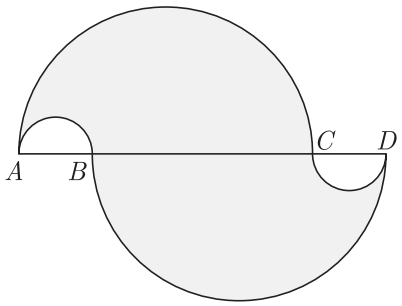
$\pi = \frac{22}{7}$.



(a) 196.75 cm^2
(b) 253.75 cm^2
(c) 202.75 cm^2
(d) 148.75 cm^2

Sol : www.cbse.site/ma/lm184

86. In given figure $AC = BD = 7$ cm and $AB = CD = 1.75$ cm. Semi-circles are drawn as shown in the figure. What is the area of the shaded region? Use $\pi = \frac{22}{7}$.



(a) 72 cm^2
(b) 36 cm^2
(c) 18 cm^2
(d) 54 cm^2

Sol : www.cbse.site/ma/lm185

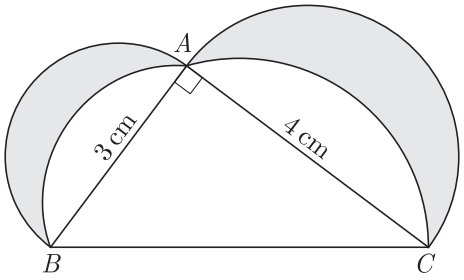
87. Two circles touch internally. The sum of their areas is 116π and the difference between their centres is 6 cm. What are the radii of the circles?
(a) 10 cm and 4 cm
(b) 6 cm and 8 cm
(c) 4 cm and 8 cm
(d) 6 cm and 4 cm

Sol : www.cbse.site/ma/lm186

88. A park is of the shape of a circle of diameter 7 m. It is surrounded by a path of width of 0.7 m. If its cost is Rs.110 per sq. m. what is the expenditure of cementing the path?
(a) ₹ 1863
(b) ₹ 3614
(c) ₹ 1261
(d) ₹ 2148

Sol : www.cbse.site/ma/lm187

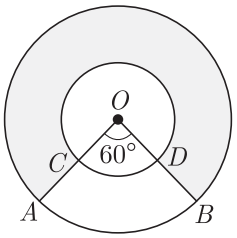
89. In the given figure, ΔABC is a right angled triangle in which $\angle A = 90°$. Semicircles are drawn on AB, AC and BC as diameters. What is the area of the shaded region?



(a) 12 cm^2
(b) 6 cm^2
(c) 18 cm^2
(d) 9 cm^2

Sol : www.cbse.site/ma/lm188

90. In the given figure, two concentric circle with centre O have radii 21 cm and 42 cm. If $\angle AOB = 60°$, what is the area of the shaded region? Use $\pi = \frac{22}{7}$.

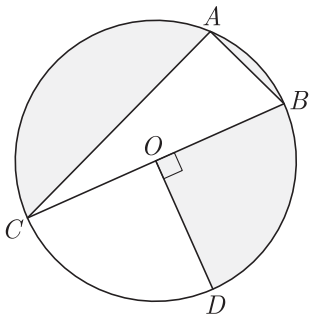


(a) 3465 cm^2

(b) 1236 cm^2
(c) 4168 cm^2
(d) 1968 cm^2

Sol : www.cbse.site/ma/lm189

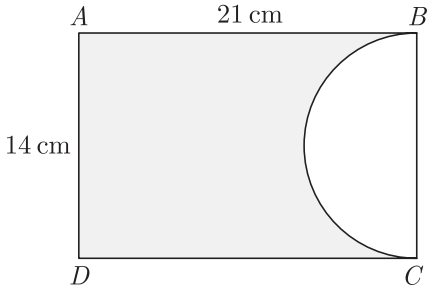
91. In the given figure, O is the centre of the circle with $AC = 24$ cm, $AB = 7$ cm and $\angle BOD = 90°$. What is the area of the shaded region?



(a) 185 cm^2
(b) 284 cm^2
(c) 105 cm^2
(d) 198 cm^2

Sol : www.cbse.site/ma/lm190

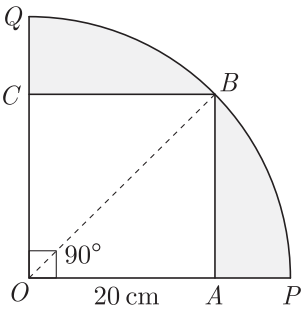
92. In the given figure, $ABCD$ is a rectangle of dimensions 21 cm $\times$ 14 cm. A semicircle is drawn with BC as diameter. What is the area and the perimeter of the shaded region in the figure?



(a) 217 cm^2
(b) 434 cm^2
(c) 314 cm^2
(d) 506 cm^2

Sol : www.cbse.site/ma/lm191

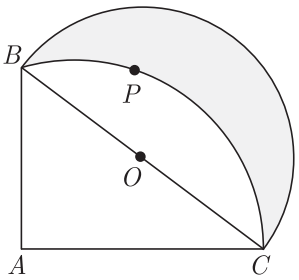
93. A square $OABC$ is inscribed in a quadrant $OPBQ$ of a circle. If $OA = 20$ cm, what is the area of the shaded region. [Use $\pi = 3.14$]



(a) 148 cm^2
(b) 228 cm^2
(c) 296 cm^2
(d) 112 cm^2

Sol : www.cbse.site/ma/lm192

94. In given figure $ABPC$ is a quadrant of a circle of radius 14 cm and a semicircle is drawn with BC as diameter. What is the are of the shaded region?

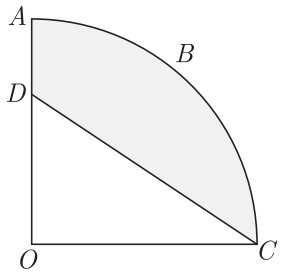


(a) 56 cm^2
(b) 112 cm^2
(c) 42 cm^2
(d) 84 cm^2

Sol : www.cbse.site/ma/lm193

95. In the figure $OABC$ is a quadrant of a circle of radius 7 cm. If $OD = 4$ cm, what is the area of

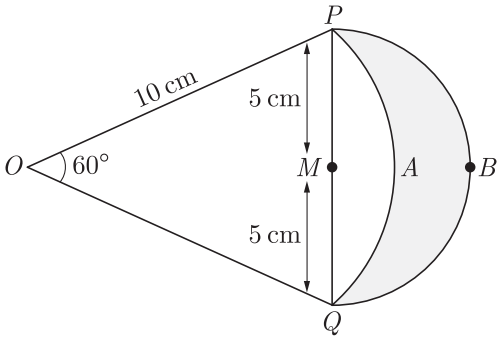
shaded region?



(a) 55 cm^2
(b) 24.5 cm^2
(c) 49 cm^2
(d) 35 cm^2

Sol : www.cbse.site/ma/lm194

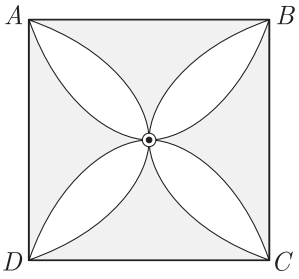
96. Figure shows two arcs PAQ and PQB. Arc PAQ is a part of circle with centre O and radius OP while arc PBQ is a semi-circle drawn on PQ as diameter with centre M. If $OP = PQ = 10$ cm the area of shaded region will be



(a) $25\left(\sqrt{3} - \frac{\pi}{6}\right) cm^2$
(b) $50\left(\sqrt{3} - \frac{\pi}{6}\right) cm^2$
(c) $50\left(\sqrt{3} + \frac{\pi}{6}\right) cm^2$
(d) $25\left(\sqrt{3} + \frac{\pi}{6}\right) cm^2$

Sol : www.cbse.site/ma/lm195

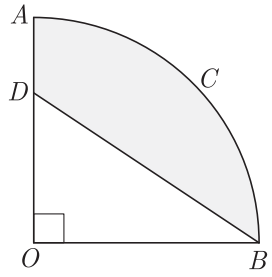
97. In fig. $ABCD$ is a square of side 14 cm. Semi-circle are drawn with each side of square as diameter. What is the area of the shaded region? Use $\pi = \frac{22}{7}$.



(a) 42 cm^2
(b) 84 cm^2
(c) 48 cm^2
(d) 96 cm^2

Sol : www.cbse.site/ma/lm196

98. In the given figure $DACB$ is a quadrant of a circle with centre O and radius 3.5 cm. If $OD = 2$, the area of the shaded region will be



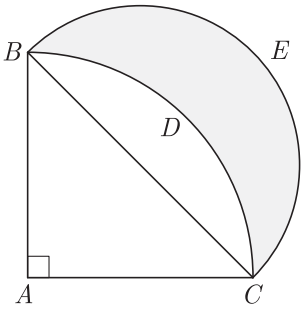
(a) 12.125 cm
(b) 6.125 cm
(c) 8.5 cm
(d) 10.25 cm

Sol : www.cbse.site/ma/lm197

99. The long and short hands of a clock are 6 cm and 4 cm long respectively. What is the sum of distances travelled by their tips in 24 hours. (Use $\pi = 3.14$)
(a) 810 cm
(b) 955 cm
(c) 620 cm
(d) 710 cm

Sol : www.cbse.site/ma/lm198

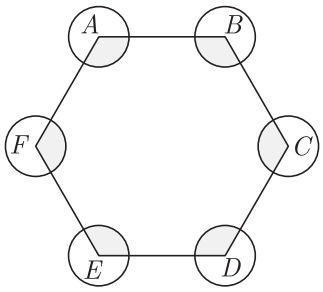
100. As $ABDC$ is a quadrant of a circle of radius 28 cm and a semi-circle BEC is drawn with BC as diameter. What is the area of the shaded region? Use $\pi = \frac{22}{7}$.



(a) 392 cm^2
(b) 196 cm^2
(c) 208 cm^2
(d) 416 cm^2

Sol : www.cbse.site/ma/lm199

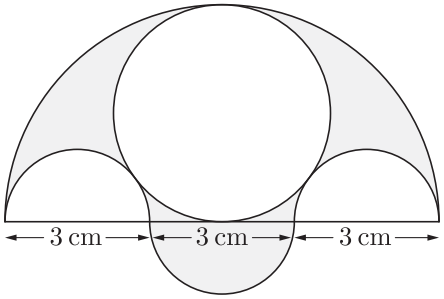
101. In fig., $ABCDEF$ is any regular hexagon with different vertices A, B, C, D, E and F as the centres of circle with same radius r are drawn. What is the area of the shaded portion?



(a) πr^2
(b) $2\pi r^2$
(c) $4\pi r^2$
(d) $8\pi r^2$

Sol : www.cbse.site/ma/lm200

102. Three semicircles each of diameter 3 cm, a circle of diameter 4.5 cm and a semicircle of radius 4.5 cm are drawn in the given figure. The area of the shaded region will be



(a) 25.6 cm^2
(b) 50.6 cm^2
(c) 12.375 cm^2
(d) 28.375 cm^2

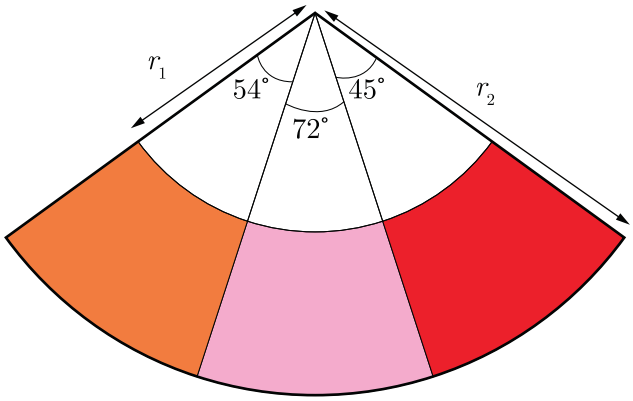
Sol : www.cbse.site/ma/lm201

COMPETENCEY BASED QUESTIONS

Direction For Question : (103-106)

Japanese fans are made of paper on a bamboo frame, usually with a design painted on them. A Japanese Fan symbolises friendship, respect and good wishes and are given on special occasions, as well as to help cool you down in hot weather. The fan is an immediately recognizable icon of Japanese culture. Today they remain an important artistic medium and stylish fashion accessory.

Lavanya hold a Japanease folding fan in her hand as shown in figure. It is shapded like a sector of a circle. The inner and outer raddi are 14 cm and 21 cm. The fan has three colour material.



103. If the region containing the pink colour makes an angle of $\theta_2 = 72^\circ$ at the centre, what is the area of the region having pink colour?

(a) 214 cm^2

(b) 154 cm^2

(c) 275 cm^2

(d) 196 cm^2

Sol : www.cbse.site/ma/lm202

104. If the region containing the orange colour makes an angle of $\theta_1 = 54^\circ$ at the centre, what is the area of the region having orange colour?

(a) 175.5 cm^2

(b) 115.5 cm^2

(c) 198.5 cm^2

(d) 210.6 cm^2

Sol : www.cbse.site/ma/lm202

105. If the region containing the red colour makes an angle of $\theta_1 = 45^\circ$ at the centre, what is the perimeter of the region having red colour?

(a) 41.5 cm

(b) 28.9 cm

(c) 56.5 cm

(d) 62.4 cm

Sol : www.cbse.site/ma/lm202

106. What is the area of the region having radius 14 cm?

(a) 324.6 cm^2

(b) 292.2 cm^2

(c) 262.2 cm^2

(d) 310.4 cm^2

Sol : www.cbse.site/ma/lm202

Direction For Question : (107-110)

It is a clock that uses a pendulum, a swinging weight, as its timekeeping element. From its invention in 1656 by Christiaan Huygens, the pendulum clock was the world's most precise timekeeper, accounting for its widespread use. Their greater accuracy allowed for the faster pace of life which was necessary for the Industrial Revolution. The home pendulum clock was replaced by less-expensive, synchronous, electric clocks in the 1930s and 40s. Pendulum clocks are now kept mostly for their decorative and antique value.

Dhriti bought a pendulum clock for her living room. the clock contains a small pendulam of lenght 45 cm. the minute hand and hour hand of the clock are 9 cm and 6 cm long respectively.

107. What is the area swept by the minute hand in 10 minutes?

(a) 72.4 cm^2

(b) 59.4 cm^2

(c) 86.4 cm^2

(d) 68.4 cm^2

Sol : www.cbse.site/ma/lm203

108. What is the angle described by hour hand in 10 minutes?

(a) 5°

(b) 10°

(c) 12°

(d) 14°

Sol : www.cbse.site/ma/lm203

109. What is the distance covered by the tip of hour hand in 3.5 hours?

(a) 11 cm

(b) 12 cm

(c) 14 cm

(d) 18 cm

Sol : www.cbse.site/ma/lm203

110. If the tip of pendulum covers a distance of 66 cm in complete oscillation, what is the angle described by pendulum at the centre?

(a) 68°

(b) 42°

(c) 56°

(d) 48°

Sol : www.cbse.site/ma/lm203

111. Upholstery is the physical act of stuffing seats and furniture with webbing, padding, springs, foam, or cushions to furniture and covering it with upholstery fabric. The word upholstery comes from the Middle English word upholder, which referred to an artisan who help up their goods. A person who works with upholstery is an upholsterer.

Eshika wants to cover the cushions of her papasan chair with a different fabric. If there are seven circular cushions that are the same size with a diameter of 32 cm, around a center cushion with a diameter of 46 cm, find the area of fabric that she will need to cover both sides of the cushions. Allow an extra 5 cm of fabric around each cushion.

(a) 28962 cm^2

(b) 24332 cm^2

(c) 18164 cm^2

(d) 16346 cm^2

Sol : www.cbse.site/ma/lm203

Direction For Question : (112-113)

A swimming pool or simply pool is a structure designed to hold water to enable swimming or other leisure activities. Pools can be built into the ground (in-ground pools) or built above ground. In-ground pools are most commonly constructed from materials such as concrete, natural stone, metal, plastic, or fiberglass, and can be of a custom size and shape or built to a standardized size, the largest of which is the Olympic-size swimming pool.

The area of a circular pool is 616 square metre. The owner wants to replace the tiling at the edge of the pool.

112. The edging is 25 cm wide, so she plans to use 6-inch square tiles to form a continuous inner edge. How many tiles will she need to purchase?

(a) 704

(b) 816

(c) 972

(d) 516

Sol : www.cbse.site/ma/lm204

113. Once the square tiles are in place around the pool, there will be extra space between the tiles. What shape of tile will best fill this space? How many tiles

of this shape should she purchase?

(a) 704

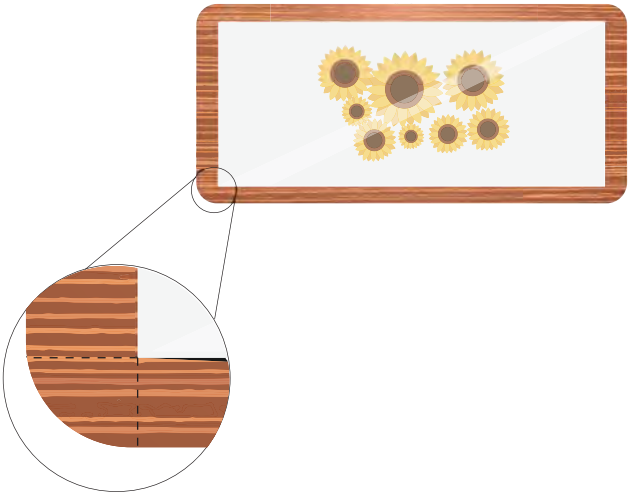
(b) 703

(c) 701

(d) 702

Sol : www.cbse.site/ma/lm204

114. Varsha dining room table has hardwood around the outside. The outer dimension of table is 135 cm by 90 cm. What is the area of wood around the edge of the table? The table has wooden edge of 7 cm around it.



(a) 2164 cm^2

(b) 3304 cm^2

(c) 2814 cm^2

(d) 3216 cm^2

Sol : www.cbse.site/ma/lm205

Direction For Question : (115-116)

An irrigation sprinkler (also known as a water sprinkler or simply a sprinkler) is a device used to irrigate agricultural crops, lawns, landscapes, golf courses, and other areas. Irrigation sprinklers can be used for residential, industrial, and agricultural usage. It is useful on uneven land where sufficient water is not available as well as on sandy soil.

A water sprinkler is set to shoot a stream of water a distance of 21 m and rotate through an angle of $80°$.

115. What is the area of the lawn it waters?

(a) 308 m^2

(b) 290 m^2

(c) 270 m^2

(d) 378 m^2

Sol : www.cbse.site/ma/lm206

116. For $r = 28$ m, what angle is required to water equal to previous area?

(a) $45°$

(b) $25°$

(c) $55°$

(d) $35°$

Sol : www.cbse.site/ma/lm206

Direction For Question : (117-119)

A motion sensor (or motion detector) is an electronic device that is designed to detect and measure movement. Motion sensors are used primarily in home and business security systems, but they can also be found in phones, paper towel dispensers, game consoles, and virtual reality systems.

A motion detector can detect movement up to 24 m

away through an angle of $\theta = 70^\circ$.

117. What area can the motion detector monitor?
(a) 352 m^2
(b) 216 m^2
(c) 398 m^2
(d) 272 m^2

Sol : www.cbse.site/ma/lm207

118. What angle is required to monitor 50% more area?
(a) 105°
(b) 95°
(c) 65°
(d) 135°

Sol : www.cbse.site/ma/lm207

119. For $\theta = 91^\circ$ what range is required for the detector to monitor 30% more area?
(a) 28 m
(b) 32 m
(c) 24 m
(d) 38 m

Sol : www.cbse.site/ma/lm207

Direction For Question : (120-121)

Sod, also known as turf, is grass. When harvested into rolls it is held together by its roots and a thin layer of soil. Sod is typically used for lawns, golf courses, and sports stadiums around the world.

When new sod is laid, a heavy roller is used to press the sod down to ensure good contact with the ground beneath. The radius of the roller is 28 cm.

120. Through what angle has the roller turned after being pulled across 11 meter of yard?
(a) 6 rotation and 90°
(b) 5 rotation and 90°
(c) 4 rotation and 50°
(d) 6 rotation and 50°

Sol : www.cbse.site/ma/lm208

121. If it is turned through by 3 revolution and 45°, What is the length, that the roller will press?
(a) 6.5 m
(b) 5.5 m
(c) 13 m
(d) 11 m

Sol : www.cbse.site/ma/lm208

Direction For Question : (122-124)

It is a device for hauling or lifting; made up of a rope, cable or chain wound around a horizontal rotating drum and turned by a crank or motor and typically mounted at the rear of a towing vehicle.

A large winch with a radius of 30 cm winds in 99 cm of cable.

122. Through what angle has it turned?
(a) 141°
(b) 189°
(c) 151°
(d) 149°

Sol : www.cbse.site/ma/lm209

123. If it is turned through an angle of 126°, What is the length, that the winch will wind?

(a) 56 cm

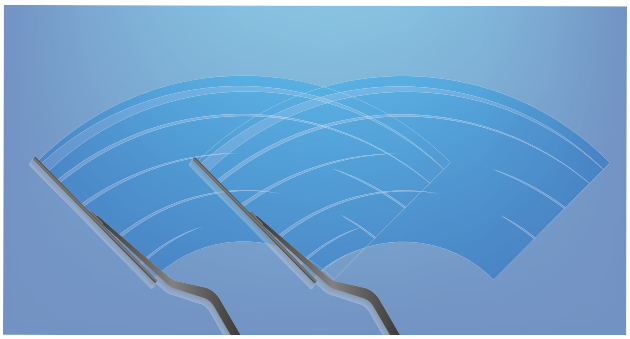
(b) 66 cm

(c) 46 cm

(d) 76 cm

Sol : www.cbse.site/ma/lm209

124. Windshield wipers are a small part of your car, but they have a big impact on your driving and overall safety. They remove rain, snow, dirt, pollen, frost and other debris quickly and smoothly at the push of a button. The windshield wiper motor moves the windshield wiper arms across the windshield. The metal or hard plastic arms drag a thin rubber (or silicone) blade across the windshield to clear away water, giving you a better view of the road.



The armature for the rear windshield wiper has a length of 63 cm, with a rubber wiper blade that is 42 cm long. What area of my rear windshield is cleaned as the armature swings back-and-forth through an angle of ?

(a) 5164.5 cm^2

(b) 2117.5 cm^2

(c) 3146.5 cm^2

(d) 4162.5 cm^2

Sol : www.cbse.site/ma/lm210

125. A voltmeter is an instrument used for measuring electric potential difference between two points in an electric circuit. When current carrying conductor placed in a magnetic field, a mechanical force acts on the conductor, if it is attached to a moving system, with the coil movement, the pointer moves over the scale.

The pointer on a voltmeter is 7 centimeters in length (see figure). What is the angle through which the pointer rotates when it moves 5.5 centimeters on the scale?

(a) 30°

(b) 45°

(c) 60°

(d) 75°

Sol : www.cbse.site/ma/lm211

126. It is an electrically powered appliance that is used to lift, lower and even move heavy or awkward objects. They are mainly used to alleviate potential strain and injury on any person who needs to lift a heavy object or where the object is just much too heavy for a human to lift unaided.

An electric hoist is being used to lift a beam (see figure). The diameter of the drum on the hoist is 42 cm, and the beam must be raised 22 cm. What is the number of degrees through which the drum must rotate.

(a) 30°

(b) 45°

(c) 60°

(d) 75°

Sol : www.cbse.site/ma/lm212

127. A pulley is a wheel with a groove along its edge for holding a rope or cable. It is a simple machine that helps change the direction and point of application of a pulling force. Pulleys are used singly or in combination to transmit energy and motion.

A boy is moving a box upward through the use of a pulley 21 cm in radius. If the pulley is rotated counterclockwise through an angle of 102°, what is the height, that the weight will rise.

(a) 52.5 cm

(b) 37.4 cm

(c) 68.3 cm

(d) 42.8 cm

Sol : www.cbse.site/ma/lm213

128. The paddle wheel in the river functions like a wheel rolling on a road. To approximate the speed of the current of a river, a circular paddle wheel with radius 1.75 meter is lowered into the water. If the current causes the wheel to rotate at a speed of 10 revolutions per minute, what is the speed of the current?.

(a) 3.3 kmph

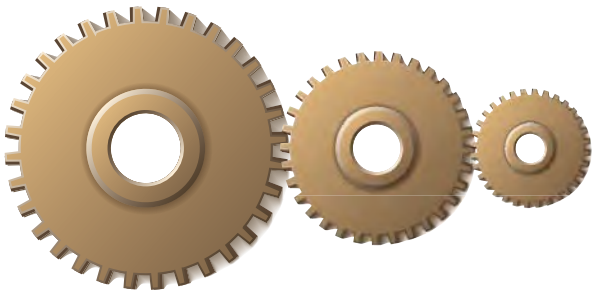
(b) 4.4 kmph

(c) 6.6 kmph

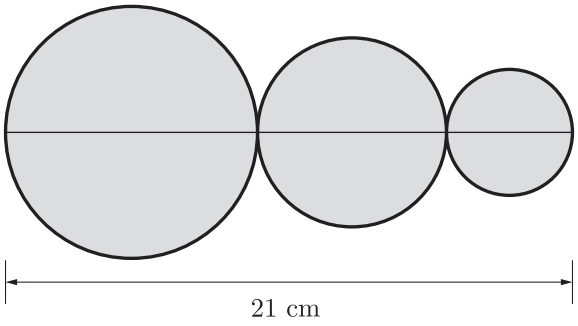
(d) 5.5 kmph

Sol : www.cbse.site/ma/lm214

129. Gears are mechanical parts with cut teeth designed to fit with teeth on another part so as to transmit or receive force and motion. Gears are also sometimes called toothed wheels or cogged wheels or cogs. The cut teeth are also sometimes called cogs.



In following figure $AB = 21$ cm what is the perimeter of combined circles?



(a) 44 cm

(b) 22 cm

(c) 66 cm

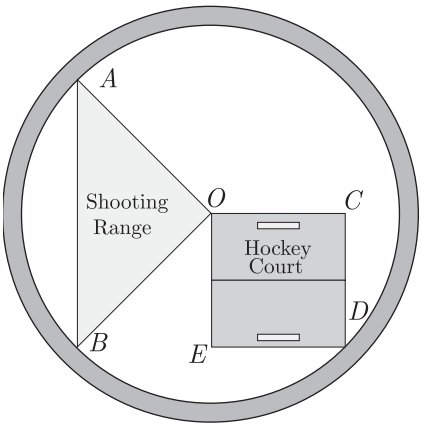
(d) 33 cm

Sol : www.cbse.site/ma/lm215

Direction For Question : (130-134)

Jawaharlal Nehru Stadium is a multi-purpose sports stadium and a very popular sports stadium of Delhi. The stadium is a part of the Jawaharlal Nehru sports complex in central Delhi, which also houses the headquarters of the Sports Authority of India, the field arm of the Ministry of Youth Affairs and Sports, and the Indian Olympic Association . It has a capacity to seat 60,000 people. It is the third largest multi-purpose stadium in India. In 2010, the Jawaharlal Nehru Stadium was the main stadium for XIX Commonwealth Games; a major sporting event.

Jawaharlal Nehru stadium is conducting the annual sports competition soon. The curator of the stadium is tasked to figuring out the dimensions for carving out some areas allotted for a hockey court and a shooting range, as shown in the figure below.



The shapes of the hockey court and the shooting range are square and triangle respectively. Both of the courts have a common edge that touches the centre of stadium. The construction of the shooting range is such that the angle to centre is 90°. The radius of the stadium is 200 metres.

130. What is the area allotted to shooting range ?

(a) 12,600 m^2

(b) 22,000 m^2

(c) 20,000 m^2

(d) 16,880 m^2

Sol : www.cbse.site/ma/lm216

131. What is the area allotted to hockey court ?

(a) 12,600 m^2

(b) 22,000 m^2

(c) 20,000 m^2

(d) 16,880 m^2

Sol : www.cbse.site/ma/lm216

132. If the team of the curators managing the stadium, likes to allot space for some more sports, how much area is available to them?

(a) 85,600 m^2

(b) 95,800 m^2

(c) 60,040 m^2

(d) 76,980 m^2

Sol : www.cbse.site/ma/lm216

133. If the boundaries of the hockey court and shooting range are to be fenced, then what is the required length of the fence ?

(a) $200(2+5\sqrt{3})$ m

(b) $200(2+3\sqrt{2})$ m

(c) $200(2+5\sqrt{2})$ m

(d) $200(2+3\sqrt{3})$ m

Sol : www.cbse.site/ma/lm216

134. If the cost of fencing is Rs 6 per metre, what is the total cost of fencing ?

(a) ₹ $2400(2+3\sqrt{2})$

(b) ₹ $1200(2+5\sqrt{2})$

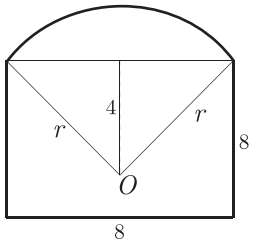
(c) ₹ $1200(2+3\sqrt{2})$

(d) ₹ $2400(2+5\sqrt{2})$

Sol : www.cbse.site/ma/lm216

Direction For Question : (135-139)

A barn is an agricultural building usually on farms and used for various purposes. A barn refers to structures that house livestock, including cattle and horses, as well as equipment and fodder, and often grain.



Ramkaran want to build a barn at his farm. He has made a design for it which is shown above. Here roof is arc of a circle of radius r at centre O.

135. What is the value of radius of arc ?

(a) $4\sqrt{3}$ m

(b) $4\sqrt{2}$ m

(c) $2\sqrt{3}$ m

(d) $2\sqrt{2}$ m

Sol : www.cbse.site/ma/lm217

136. What is the curved width of roof ?

(a) $2\pi\sqrt{3}$ m

(b) $4\pi\sqrt{2}$ m

(c) $2\pi\sqrt{2}$ m

(d) $4\pi\sqrt{3}$ m

Sol : www.cbse.site/ma/lm217

137. What is area of cross section of barn ?

(a) $8(6+\pi)\,\text{m}^2$

(b) $4(6+\pi)\,\text{m}^2$

(c) $8(3+\pi)\,\text{m}^2$

(d) $4(3+\pi)\,\text{m}^2$

Sol : www.cbse.site/ma/lm217

138. If the length of the barn is 12 meters, what is the curved surface area of roof?

(a) $32\sqrt{2}\,\pi\,\text{m}^2$

(b) $16\sqrt{2}\,\pi\,\text{m}^2$

(c) $48\sqrt{2}\,\pi\,\text{m}^2$

(d) $24\sqrt{2}\,\pi\,\text{m}^2$

Sol : www.cbse.site/ma/lm217

139. What is the storage capacity of barn ?

(a) $48(6+\pi)\,\text{m}^3$

(b) $48(3+\pi)\,\text{m}^3$

(c) $96(6+\pi)\,\text{m}^3$

(d) $96(3+\pi)\,\text{m}^3$

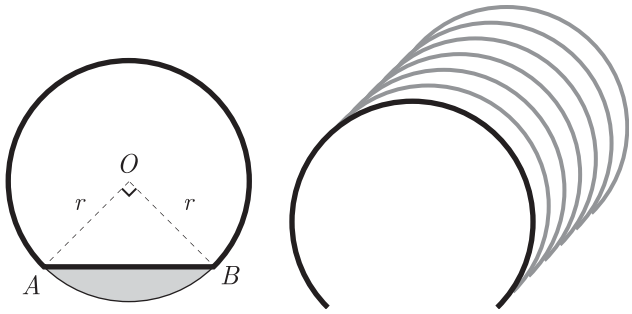
Sol : www.cbse.site/ma/lm217

Direction For Question : (140-144)

The tunnels are defined as the underground passages that are used for the transportation purposes. These permit the transmission of passengers and freights, or it may be for the transportation of utilities like water, sewage or gas etc. The tunnel engineering is one of the most interesting disciplines in engineering. The work is complex and difficult throughout its course, even though it is interesting.

Earth is excavated to make a road tunnel. The tunnel is a cylinder of radius 7 m and length 450 m.

A level surface is laid inside the tunnel to make road. Figure shows the circular cross - section of the tunnel. The level surface is represented by AB, the centre of the circle is O and $\angle AOB = 90°$. The space below AB is filled with rubble (debris from the demolition buildings).



Steel girders are erected above the tracks to strengthen the tunnel. The girders are erected at 6 m intervals along the length of the tunnel, with one at each end.

140. What is the cross section area of tunnel before filling debris on ground plane ?
(a) 154 m^2
(b) 140 m^2
(c) 155 m^2
(d) 145 m^2

Sol : www.cbse.site/ma/lm218

141. What is the area of cross section of tunnel after filling debris on ground plane?
(a) 138 m^2
(b) 140 m^2
(c) 152 m^2
(d) 145 m^2

Sol : www.cbse.site/ma/lm218

142. What is the length of each girder ?
(a) 11 m
(b) 22 m
(c) 33 m
(d) 44 m

Sol : www.cbse.site/ma/lm218

143. How many girders are erected ?
(a) 76
(b) 75
(c) 74
(d) 73

Sol : www.cbse.site/ma/lm218

144. If the weight of 1 meter girder is 25 kg, how much steel is required ?
(a) 2508 quintals
(b) 627 quintals
(c) 2246 quintals
(d) 1646 quintals

Sol : www.cbse.site/ma/lm218

SELF TEST QUESTIONS

145. The areas of two circles are in the ratio 9 : 4, then what is the ratio of their circumferences?
(a) 4 : 9
(b) 2 : 3
(c) 3 : 2
(d) 9 : 4

Sol : www.cbse.site/ma/lm219

146. The length of the minute hand of clock is 14 cm. What is the area swept by the minute hand in 15 minutes?
(a) 154 cm^2
(b) 87 cm^2
(c) 154π cm^2
(d) 87π cm^2

Sol : www.cbse.site/ma/lm220

147. The perimeter of a sector of a circle with radius 6.5 cm is 31 cm, what is the area of the sector?
(a) 31 cm^2
(b) 117π cm^2
(c) 58.5 cm^2
(d) 117 cm^2

Sol : www.cbse.site/ma/lm221

148. A piece of wire 22 cm long is bent into the form an arc of a circle subtending an angle of 60° at its centre. What is the radius of the circle? [Use $\pi = \frac{22}{7}$]
(a) 42π cm
(b) 21π cm
(c) 42 cm
(d) 21 cm

Sol : www.cbse.site/ma/lm222

149. The perimeter of a sector of a circle of radius 5.2 cm is 16.4 cm. What is the area of the sector?
(a) 62 cm^2
(b) 128 cm^2
(c) 31 cm^2
(d) 15.6 cm^2

Sol : www.cbse.site/ma/lm223

150. The area of a circular play ground is 22176 cm^2. What is the cost of fencing this ground at the rate of 50 per metre?
(a) ₹ 132
(b) ₹ 264
(c) ₹ 165
(d) ₹ 365

Sol : www.cbse.site/ma/lm224

151. The wheel of a motorcycle is of radius 35 cm. How many revolutions are required to travel a distance of 11 m?
(a) 2
(b) 5
(c) 10
(d) 18

Sol : www.cbse.site/ma/lm225

152. The length of the minute hand of a clock is 14 cm. What is the area swept by the minute hand from 9 a.m. to 9.35 a.m?
(a) 151.33 cm^2
(b) 296.33 cm^2
(c) 120.33 cm^2
(d) 259.33 cm^2

Sol : www.cbse.site/ma/lm226

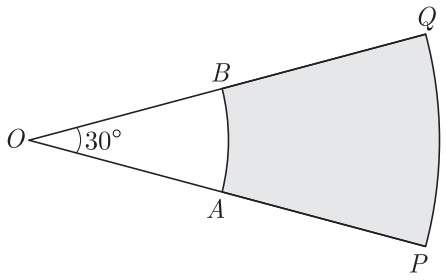
153. A road which is 7 m wide surrounds a circular park whose circumference is 88 m. What is the area of the road?
(a) 165 m^2
(b) 330 m^2
(c) 385 m^2
(d) 770 m^2

Sol : www.cbse.site/ma/lm227

154. Three horses are tied each with 7 m long rope at three corners of a triangular field having sides 20 m, 34 m and 42 m. What is the area of the plot which can be grazed by the horses?
(a) 77 m^2
(b) 154 m^2
(c) 88 m^2
(d) 176 m^2

Sol : www.cbse.site/ma/lm228

155. In given figure, PQ and AB are two arcs of concentric circles of radii 7 cm and 3.5 cm respectively, with centre O. If $\angle POQ = 30^\circ$, what is the area of shaded region?



(a) 9.625 cm^2
(b) 18.5 cm^2
(c) 12.625 cm^2
(d) 14.5 cm^2

Sol : www.cbse.site/ma/lm229

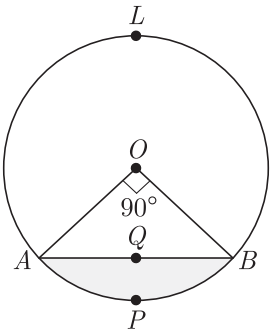
156. A horse is tethered to one corner of a rectangular field of dimensions 70 m $\times$ 52 m, by a rope of length 21 m. How much area of the field can it graze?
(a) 392 m^2
(b) 612 m^2
(c) 693 m^2
(d) 346.5 m^2

Sol : www.cbse.site/ma/lm230

157. Sides of a right triangular field are 25 m, 24 m and 7 m. At the three corners of the field, a cow, a buffalo and a horse are tied separately with ropes of 3.5 m each to graze in the field. What is the area of the field that cannot be grazed by these animals?
(a) 138 m^2
(b) 129.5 m^2
(c) 64.75 m^2
(d) 196 m^2

Sol : www.cbse.site/ma/lm231

158. In the given figure, a chord AB of the circle with centre O and radius 10 cm, that subtends a right angle at the centre of the circle. What is the area of the minor segment $AQBP$. What is the area of major segment $ALBQA$? (Use $\pi = 3.14$)



(a) 285.5 cm^2
(b) 168.5 cm^2
(c) 210.5 cm^2
(d) 192.5 cm^2

Sol : www.cbse.site/ma/lm232

159. If circumference of a circle is 44 cm, then what will be the area of the circle?
(a) 154π cm^2
(b) 44π cm^2
(c) 88π cm^2
(d) 22π cm^2

Sol : www.cbse.site/ma/lm233

160. A steel wire when bent in the form of a square encloses an area or 121 cm^2. If the same wire is bent in the form of a circle, what is the circumference of the circle?
(a) 44π cm
(b) 22π cm
(c) 44 cm
(d) 22 cm

Sol : www.cbse.site/ma/lm234

161. What is the radius of a circle whose circumference is equal to the sum of the circumference of two circles of diameter 36 cm and 20 cm
(a) 56 cm
(b) 28 cm
(c) 56π cm
(d) 28π cm

Sol : www.cbse.site/ma/lm235

162. What is the diameter of a circle whose area is equal to the sum of areas of two circles of diameter 16 cm and 12 cm?

(a) 10π cm

(b) 20π cm

(c) 20 cm

(d) 10 cm

Sol : www.cbse.site/ma/lm236

163. If the circumference of a circle increases from 4π to 8π, then what about its area ?

(a) half

(b) 2 times

(c) 4 times

(d) does not change

Sol : www.cbse.site/ma/lm237

164. If the radius of the circle is 6 cm and the length of an arc 12 cm. What is the area of the sector?

(a) 36 cm^2

(b) 18 cm^2

(c) 72 cm^2

(d) 108 cm^2

Sol : www.cbse.site/ma/lm238

165. A chord of a circle of radius 10 cm subtends a right angle at the centre. What is area of minor segment. $(\pi = 3.14)$

(a) 10π cm^2

(b) 20π cm^2

(c) 28.5 cm^2

(d) 57.5 cm^2

Sol : www.cbse.site/ma/lm239

166. If the perimeter of a semi-circular protractor is 36 cm, what is its diameter. $\left(\text{Use } \pi = \frac{22}{7}\right)$?

(a) 28 cm

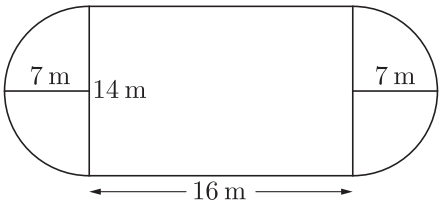
(b) 28π cm

(c) 14 cm

(d) 14π cm

Sol : www.cbse.site/ma/lm240

167. What is the area of the adjoining diagram?



(a) 214 m^2

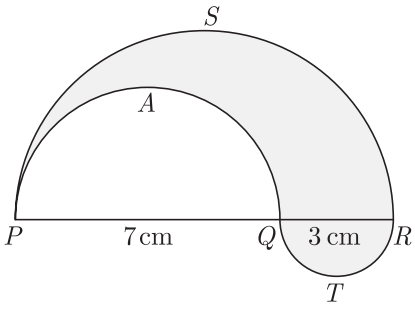
(b) 126 m^2

(c) 378 m^2

(d) 412 m^2

Sol : www.cbse.site/ma/lm241

168. In the fig., PSR, RTQ and PAQ are three semi-circles of diameters 10 cm, 3 cm and 7 cm region respectively. What is the perimeter of shaded region? Use $\pi = \frac{22}{7}$.



(a) 62.1 cm^2

(b) 92.1 cm^2

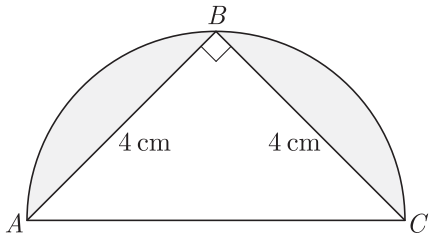
(c) 31.4 cm^2

(d) 12.4 cm^2

Sol : www.cbse.site/ma/lm242

169. In the figure, ΔABC is in the semi-circle, what is the area of the shaded region given that $AB = BC = 4$

cm? (Use $\pi = 3.14$)



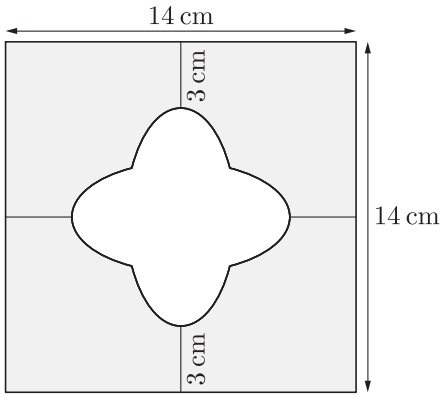
(a) $9.12\ \text{cm}^2$
(b) $4.56\ \text{cm}^2$
(c) $2.16\ \text{cm}^2$
(d) $12.16\ \text{cm}^2$

Sol : www.cbse.site/ma/lm243

170. In a circle of radius 21 cm, an arc subtends an angle of 60° at the centre. What is the area of sector formed by the arc?
(a) $312\ \text{cm}^2$
(b) $298\ \text{cm}^2$
(c) $402\ \text{cm}^2$
(d) $231\ \text{cm}^2$

Sol : www.cbse.site/ma/lm244

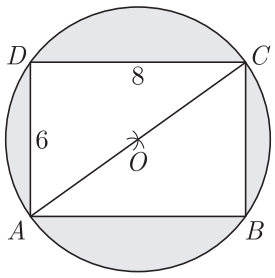
171. In fig., what is the area of the shaded region ($\pi = 3.14$)



(a) $205\ \text{cm}^2$
(b) $155\ \text{cm}^2$
(c) $195\ \text{cm}^2$
(d) $104\ \text{cm}^2$

Sol : www.cbse.site/ma/lm245

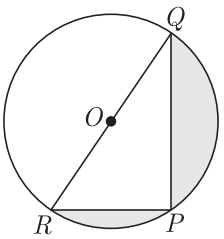
172. What is the area of the shaded region in Figure, if $ABCD$ is a rectangle with sides 8 cm and 6 cm and O is the centre of circle? (Take $\pi = 3.14$)



(a) $10.5\ \text{cm}^2$
(b) $40.5\ \text{cm}^2$
(c) $20.5\ \text{cm}^2$
(d) $30.5\ \text{cm}^2$

Sol : www.cbse.site/ma/lm246

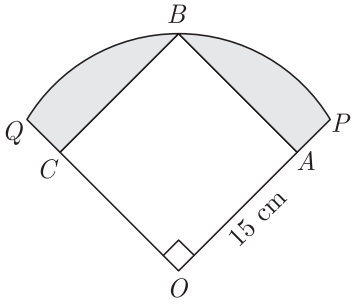
173. What is the area of the shaded region in figure, if $PQ = 24$ cm, $PR = 7$ cm and O is the centre of the circle?



(a) $210.5\ \text{cm}^2$
(b) $292.8\ \text{cm}^2$
(c) $161.5\ \text{cm}^2$
(d) $192.8\ \text{cm}^2$

Sol : www.cbse.site/ma/lm247

174. In given figure, a square $OABC$ is inscribed in a quadrant $OPBQ$. If $OA = 15$ cm, what is the area of the shaded region? (Use $\pi = 3.14$).



(a) $226.5\ \text{cm}^2$

(b) $128.25\ \text{cm}^2$

(c) $198.5\ \text{cm}^2$

(d) $250.5\ \text{cm}^2$

Sol : www.cbse.site/ma/lm248

CHAPTER 8

PROBABILITY

1. The probability that a number selected at random from the numbers 1, 2, 3, ..., 15 is a multiple of 4 is
(a) $\frac{4}{15}$
(b) $\frac{2}{15}$
(c) $\frac{1}{15}$
(d) $\frac{1}{5}$

Sol : www.cbse.site/ma/om101

2. Two coins are tossed simultaneously. The probability of getting at most one head is
(a) $\frac{1}{4}$
(b) $\frac{1}{2}$
(c) $\frac{2}{3}$
(d) $\frac{3}{4}$

Sol : www.cbse.site/ma/om102

3. If an event cannot occur, then its probability is
(a) 1
(c) $\frac{2}{3}$
(d) $\frac{3}{4}$
(d) 0

Sol : www.cbse.site/ma/om103

4. Which of the following cannot be the probability of an event?
(a) $\frac{1}{3}$
(b) 0.1
(c) 3%
(d) $\frac{17}{16}$

Sol : www.cbse.site/ma/om104

5. An event is very unlikely to happen. Its probability is closest to
(a) 0.0001
(b) 0.001
(c) 0.01
(d) 0.1

Sol : www.cbse.site/ma/om105

6. If the probability of an event is p, then the probability of its complementary event will be
(a) $p-1$
(b) p
(c) $1-p$
(d) $1-\frac{1}{p}$

Sol : www.cbse.site/ma/om106

7. The probability expressed as a percentage of a particular occurrence can never be
(a) less than 100
(b) less than 0
(c) greater than 1
(d) anything but a whole number

Sol : www.cbse.site/ma/om107

8. The $P(A)$ denotes the probability of an event A, then
(a) $P(A) < 0$
(b) $P(A) > 1$
(c) $0 \leq P(A) \leq 1$
(d) $-1 \leq P(A) \leq 1$

Sol : www.cbse.site/ma/om108

9. If a card is selected from a deck of 52 cards, then the probability of its being a red face card is
(a) $\frac{3}{26}$
(b) $\frac{3}{13}$
(c) $\frac{2}{13}$
(d) $\frac{1}{2}$

Sol : www.cbse.site/ma/om109

10. A card is drawn from a deck of 52 cards. The event E is that card is not an ace of hearts. The number of outcomes favourable to E is
(a) 4
(b) 13
(c) 48
(d) 51

Sol : www.cbse.site/ma/om110

11. When a die is thrown, the probability of getting an odd number less than 3 is
(a) $\frac{1}{6}$
(b) $\frac{1}{3}$
(c) $\frac{1}{2}$
(d) 0

Sol : www.cbse.site/ma/om111

12. The probability of getting a bad egg in a lot of 400 is 0.035. The number of bad eggs in the lot is
(a) 7
(b) 14
(c) 21
(d) 28

Sol : www.cbse.site/ma/om112

13. A girl calculates that the probability of her winning the first prize in a lottery is 0.08. If 6000 tickets are sold, then how many tickets has she bought?
(a) 40
(b) 240
(c) 480
(d) 750

Sol : www.cbse.site/ma/om113

14. One ticket is drawn at random from a bag containing tickets numbered 1 to 40. The probability that the selected ticket has a number which is a multiple of 5 is
(a) $\frac{1}{5}$
(b) $\frac{3}{5}$
(c) $\frac{4}{5}$
(d) $\frac{1}{3}$

Sol : www.cbse.site/ma/om114

15. Someone is asked to take a number from 1 to 100. The probability that it is a prime, is
(a) $\frac{8}{25}$
(b) $\frac{1}{4}$
(c) $\frac{3}{4}$
(d) $\frac{13}{50}$

Sol : www.cbse.site/ma/om115

16. The probability of getting a number greater then 3 in throwing a die is
(a) $\frac{1}{3}$
(b) $\frac{1}{4}$
(c) $\frac{3}{4}$
(d) $\frac{2}{3}$

Sol : www.cbse.site/ma/om116

17. Out of one digit prime numbers, one number is selected at random. The probability of selecting an even number is
(a) $\frac{1}{3}$
(b) $\frac{1}{4}$
(c) $\frac{3}{4}$
(d) $\frac{2}{3}$

Sol : www.cbse.site/ma/om117

18. A bag contains 3 red and 2 blue marbles. If a marble is drawn at random, then the probability of drawing a blue marble is
(a) $\frac{2}{5}$
(b) $\frac{1}{4}$
(c) $\frac{3}{5}$
(d) $\frac{2}{3}$

Sol : www.cbse.site/ma/om118

19. A single letter is selected at random from the word PROBABILITY. The probability that the selected letter is a vowel is
(a) $\frac{2}{11}$
(b) $\frac{3}{11}$
(c) $\frac{4}{11}$
(d) 0

Sol : www.cbse.site/ma/om119

20. A fair die is thrown once. The probability of getting a composite number less than 5 is
(a) $\frac{1}{3}$
(b) $\frac{1}{6}$
(c) $\frac{2}{3}$
(d) 0

Sol : www.cbse.site/ma/om120

21. If a letter is chosen at random from the letter of English alphabet, then the probability that it is a letter of the word DELHI is
(a) $\frac{1}{5}$
(b) $\frac{1}{26}$
(c) $\frac{5}{26}$
(d) $\frac{21}{26}$

Sol : www.cbse.site/ma/om121

22. The probability that a two digit number selected at random will be a multiple of 3 and not a multiple of 5 is
(a) $\frac{2}{15}$
(b) $\frac{4}{15}$
(c) $\frac{1}{15}$
(d) $\frac{4}{90}$

Sol : www.cbse.site/ma/om122

23. If in a lottery, there are 5 prizes and 20 blanks, then the probability of getting a prize is
(a) $\frac{2}{5}$
(b) $\frac{4}{5}$
(c) $\frac{1}{5}$
(d) 1

Sol : www.cbse.site/ma/om123

24. If a number x is chosen at random from the numbers $-2, -1, 0, 1, 2$. Then, the probability that $x^2 < 2$ is
(a) $\frac{2}{5}$
(b) $\frac{4}{5}$
(c) $\frac{1}{5}$
(d) $\frac{3}{5}$

Sol : www.cbse.site/ma/om124

25. Which of the following relationship is the correct?
(a) $P(E) + P(\overline{E}) = 1$
(b) $P(\overline{E}) - P(E) = 1$
(c) $P(E) = 1 + P(\overline{E})$
(d) None of these

Sol : www.cbse.site/ma/om125

26. Two dice are thrown together. The probability that sum of the two numbers will be a multiple of 4, is:
(a) $\frac{1}{2}$
(b) $\frac{1}{3}$
(c) $\frac{1}{8}$
(d) $\frac{1}{4}$

Sol : www.cbse.site/ma/om126

27. A letter is chosen at random from the letters of the word ASSASSINATION, then the probability that the letter chosen is a vowel is in the form of $\frac{6}{2x+1}$, then x is equal to
(a) 5
(b) 6
(c) 7
(d) 8

Sol : www.cbse.site/ma/om127

28. Ramesh buys a fish from a shop for his aquarium. The shopkeeper takes out one fish at random a tank containing 5 male fish and 9 female fish. Then, the probability that the fish taken out is a male fish, is
(a) $\frac{5}{13}$
(b) $\frac{5}{14}$
(c) $\frac{6}{13}$
(d) $\frac{7}{13}$

Sol : www.cbse.site/ma/om128

29. A number x is selected from the numbers 1, 2, 3 and then a second number y is randomly selected from the numbers 1, 4, 9 then the probability that the product xy of the two numbers will be less than 9 is
(a) $\frac{3}{7}$
(b) $\frac{4}{9}$
(c) $\frac{5}{9}$
(d) $\frac{7}{9}$

Sol : www.cbse.site/ma/om129

30. There are 1000 sealed envelopes in a box. 10 of them contain a cash prize of ₹ 100 each, 100 of them contain a cash prize of ₹ 50 each and 200 of them contain a cash prize of ₹ 10 each and rest do not contain any cash prize. If they are well-shuffled and an envelope is picked up out, then the probability that is contains no cash prize is

(a) 0.65

(b) 0.69

(c) 0.54

(d) 0.57

Sol : www.cbse.site/ma/om130

31. On a single roll of a die, the probability of getting a number 8 is .....

(a) 0.5

(b) 0.4

(c) 1

(d) 0

Sol : www.cbse.site/ma/om131

32. On a single roll of a die, the probability of getting a number less than 7 is .....

(a) 0.5

(b) 0.4

(c) 0

(d) 1

Sol : www.cbse.site/ma/om132

33. A number is chosen at random from the numbers $-5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5$. Then the probability that square of this number is less than or equal to 1 is ..... .

(a) $\frac{9}{11}$

(b) $\frac{3}{11}$

(c) $\frac{8}{11}$

(d) $\frac{7}{11}$

Sol : www.cbse.site/ma/om133

34. What is the probability of an impossible event?

(a) ∞

(b) 1

(c) 0

(d) 0.5

Sol : www.cbse.site/ma/om134

35. A card is drawn at random from a well-shuffled pack of 52 cards. What is the probability of getting a red king?

(a) $\frac{1}{13}$

(b) $\frac{1}{26}$

(c) $\frac{3}{26}$

(d) $\frac{1}{52}$

Sol : www.cbse.site/ma/om135

36. A card drawn at random from a well shuffled deck of 52 playing cards. What is the probability of getting a black king?

(a) $\frac{1}{13}$

(b) $\frac{1}{26}$

(c) $\frac{3}{26}$

(d) $\frac{1}{52}$

Sol : www.cbse.site/ma/om136

37. A die is thrown once. What is the probability of getting a number less than 3?

(a) $\frac{1}{3}$

(b) $\frac{1}{4}$

(c) $\frac{1}{2}$

(d) $\frac{1}{5}$

Sol : www.cbse.site/ma/om137

38. A card is drawn from a well shuffled deck of playing cards. What is the probability of drawing a red face card?

(a) $\frac{1}{26}$

(b) $\frac{3}{26}$

(c) $\frac{5}{26}$

(d) $\frac{7}{26}$

Sol : www.cbse.site/ma/om138

39. What is the probability of getting a sum of 9, when two dice are thrown simultaneously?

(a) $\frac{1}{9}$

(b) $\frac{7}{9}$
(c) $\frac{5}{9}$
(d) $\frac{2}{9}$

Sol : www.cbse.site/ma/om139

40. A bag contains 3 red and 5 black balls. A ball is drawn at random from the bag. What is the probability that the drawn ball is not red ?
(a) $\frac{7}{8}$
(b) $\frac{3}{8}$
(c) $\frac{1}{4}$
(d) $\frac{5}{8}$

Sol : www.cbse.site/ma/om140

41. If three different coins are tossed together, then What is the probability of getting two heads?
(a) $\frac{3}{8}$
(b) $\frac{1}{4}$
(c) $\frac{1}{2}$
(d) $\frac{5}{8}$

Sol : www.cbse.site/ma/om141

42. A number is chosen at random from the numbers $-3, -2, -1, 0, 1, 2, 3$. What will be the probability that square of this number is less than or equal to 1?
(a) $\frac{3}{7}$
(b) $\frac{4}{7}$
(c) $\frac{5}{7}$
(d) $\frac{2}{7}$

Sol : www.cbse.site/ma/om142

43. The probability of selecting a rotten apple randomly from a heap of 900 apples is 0.18. What is the number of rotten apples in the heap ?
(a) 738
(b) 82
(c) 162
(d) 18

Sol : www.cbse.site/ma/om143

44. A number x is chosen from 25, 24, 23, $-2, -1$, 0, 1, 2, 3. What is the probability that $|x| < 3$?
(a) $\frac{3}{7}$
(b) $\frac{4}{7}$
(c) $\frac{4}{9}$
(d) $\frac{5}{9}$

Sol : www.cbse.site/ma/om144

45. A bag contains 5 red balls and some blue balls. If the probability of drawing a blue ball at random from the bag is three times that of a red ball, what is the number of blue balls in the bag.
(a) 13
(b) 14
(c) 15
(d) 16

Sol : www.cbse.site/ma/om145

46. If a pair of dice is thrown once, then what is the probability of getting a sum of 8?
(a) $\frac{5}{12}$
(b) $\frac{5}{36}$
(c) $\frac{5}{18}$
(d) $\frac{11}{36}$

Sol : www.cbse.site/ma/om146

47. A die thrown once. What is the probability of getting an even prime number?
(a) $\frac{1}{4}$
(b) $\frac{1}{2}$
(c) $\frac{1}{6}$
(d) $\frac{1}{3}$

Sol : www.cbse.site/ma/om147

48. Two different dice are thrown together, what is is the probability that the sum of the numbers appeared is less than 5.
(a) $\frac{1}{6}$
(b) $\frac{1}{3}$
(c) $\frac{5}{6}$
(d) $\frac{2}{3}$

Sol : www.cbse.site/ma/om148

49. In a lottery, there are 10 prizes and 25 blanks. What is the probability of getting a prize?
(a) $\frac{2}{7}$

(b) $\frac{5}{7}$
(c) $\frac{3}{7}$
(d) $\frac{4}{7}$

Sol : www.cbse.site/ma/om149

50. Two different coins are tossed simultaneously, what is is the probability of getting at least one head?
(a) $\frac{3}{7}$
(b) $\frac{2}{7}$
(c) $\frac{5}{7}$
(d) $\frac{3}{4}$

Sol : www.cbse.site/ma/om150

51. A pair of dice is thrown once. What is the probability of getting a doublet?
(a) $\frac{1}{2}$
(b) $\frac{1}{3}$
(c) $\frac{1}{6}$
(d) $\frac{1}{5}$

Sol : www.cbse.site/ma/om151

52. A die is thrown once. What is the probability of getting a prime number?
(a) $\frac{1}{3}$
(b) $\frac{2}{3}$
(c) $\frac{1}{2}$
(d) $\frac{1}{4}$

Sol : www.cbse.site/ma/om152

53. If a number x is chosen at random from the numbers $-3, -2, -1. 0, 1, 2, 3$, then What is the probability of $x^2 < 4$?
(a) $\frac{4}{7}$
(b) $\frac{3}{7}$
(c) $\frac{1}{7}$
(d) $\frac{2}{7}$

Sol : www.cbse.site/ma/om153

54. A bag contains cards with numbers written on it from 1–80. A card is pulled out at random. What is the probability that the card shows a perfect square?
(a) $\frac{1}{2}$
(b) $\frac{1}{5}$
(c) $\frac{1}{10}$
(d) $\frac{3}{10}$

Sol : www.cbse.site/ma/om154

55. A bag contains 6 red and 5 blue balls. What is the probability that the ball drawn is not red?
(a) $\frac{5}{11}$
(b) $\frac{6}{11}$
(c) $\frac{2}{11}$
(d) $\frac{7}{11}$

Sol : www.cbse.site/ma/om155

56. There are 30 cards of the same size in a bag in which the numbers 1 to 30 are written. One card is taken out of the bag at random. What is the probability that the number on the selected card is not divisible by 3?
(a) $\frac{1}{15}$
(b) $\frac{2}{3}$
(c) $\frac{1}{10}$
(d) $\frac{1}{3}$

Sol : www.cbse.site/ma/om156

57. Two different dice are tossed together. What is the probability that the number on each die is even ?
(a) $\frac{1}{2}$
(b) $\frac{1}{4}$
(c) $\frac{3}{4}$
(d) $\frac{1}{6}$

Sol : www.cbse.site/ma/om157

58. A letter of English alphabet is chosen at random, what is the probability that the letter so chosen is a vowel ?
(a) $\frac{5}{26}$
(b) $\frac{21}{26}$
(c) $\frac{2}{13}$
(d) $\frac{7}{13}$

Sol : www.cbse.site/ma/om158

59. A letter of English alphabet is chosen at random, what is the probability that the letter so chosen is a

consonant?
(a) $\frac{5}{26}$
(b) $\frac{21}{26}$
(c) $\frac{2}{13}$
(d) $\frac{7}{13}$

Sol : www.cbse.site/ma/om159

60. Harpreet tosses two different coins simultaneously. What is the probability that she gets at least one head ?
(a) $\frac{1}{4}$
(b) $\frac{2}{4}$
(c) $\frac{3}{4}$
(d) 1

Sol : www.cbse.site/ma/om160

61. Rashi tosses two different coins simultaneously. What is the probability that she gets one head and one tail ?
(a) $\frac{1}{4}$
(b) $\frac{2}{4}$
(c) $\frac{3}{4}$
(d) $\frac{1}{2}$

Sol : www.cbse.site/ma/om161

62. A bag contains cards bearing numbers from 11 to 30. A card is taken out from the bag at random. What is the probability that the selected card has multiple of 5 on it?
(a) $\frac{2}{5}$
(b) $\frac{1}{5}$
(c) $\frac{3}{20}$
(d) $\frac{11}{20}$

Sol : www.cbse.site/ma/om162

63. A bag contains 5 red, 8 green and 7 white balls. One ball is drawn at random from the bag, what is the probability of getting not a white ball ?
(a) $\frac{3}{10}$
(b) $\frac{7}{10}$
(c) $\frac{13}{20}$
(d) $\frac{7}{20}$

Sol : www.cbse.site/ma/om163

64. A bag contains 5 red, 8 green and 7 white balls. One ball is drawn at random from the bag, what is the probability neither a green nor a red ball?
(a) $\frac{3}{10}$
(b) $\frac{7}{10}$
(c) $\frac{13}{20}$
(d) $\frac{7}{20}$

Sol : www.cbse.site/ma/om164

65. Two dice are rolled simultaneously. What is the probability that the sum of numbers appearing is 10?
(a) $\frac{1}{9}$
(b) $\frac{1}{18}$
(c) $\frac{1}{12}$
(d) $\frac{1}{36}$

Sol : www.cbse.site/ma/om165

66. In a family of two children What is the probability of having at least one girl?
(a) $\frac{1}{4}$
(b) $\frac{1}{2}$
(c) $\frac{3}{4}$
(d) 1

Sol : www.cbse.site/ma/om166

67. What is the probability that a leap year has 53 Sundays?
(a) $\frac{2}{7}$
(b) $\frac{5}{7}$
(c) $\frac{1}{53}$
(d) $\frac{7}{53}$

Sol : www.cbse.site/ma/om167

68. Two coins are tossed together. What is the probability of getting both heads or both tails?
(a) $\frac{1}{2}$
(b) $\frac{1}{3}$
(c) $\frac{1}{4}$
(d) $\frac{1}{5}$

Sol : www.cbse.site/ma/om168

69. One card is drawn from a well shuffled deck of 52

cards. What is the probability of getting a non face card?

(a) $\frac{10}{26}$

(b) $\frac{13}{52}$

(c) $\frac{10}{13}$

(d) $\frac{3}{13}$

Sol : www.cbse.site/ma/om169

70. One card is drawn from a well shuffled deck of 52 cards. What is the probability of getting a black king.

(a) $\frac{1}{26}$

(b) $\frac{13}{52}$

(c) $\frac{10}{13}$

(d) $\frac{3}{13}$

Sol : www.cbse.site/ma/om170

71. Two dice are thrown together. What is the probability of getting a doublet ?

(a) $\frac{1}{12}$

(b) $\frac{1}{6}$

(c) $\frac{1}{18}$

(d) $\frac{1}{36}$

Sol : www.cbse.site/ma/om171

Direction For Question :

A lot consists of 144 ball pens of which 20 are defective and others are good. Nuri will buy a pen if it is good, but will not buy if it is defective. The shopkeeper draws one pen at random and gives it to her.

72. What is the probability that she will buy it?

(a) $\frac{5}{18}$

(b) $\frac{5}{36}$

(c) $\frac{13}{18}$

(d) $\frac{31}{36}$

Sol : www.cbse.site/ma/om172

73. What is the probability that she will not buy it?

(a) $\frac{5}{18}$

(b) $\frac{5}{36}$

(c) $\frac{13}{18}$

(d) $\frac{31}{36}$

Sol : www.cbse.site/ma/om172

74. A bag contains 5 red balls and some blue balls. If the probability of drawing a blue ball is double that of red ball, How many balls are in the bag?

(a) 12

(b) 10

(c) 8

(d) 4

Sol : www.cbse.site/ma/om173

75. Two different dice are thrown together. What is the probability that the product of the number appeared is less than 18?

(a) $\frac{23}{36}$

(b) $\frac{13}{36}$

(c) $\frac{13}{18}$

(d) $\frac{5}{18}$

Sol : www.cbse.site/ma/om174

Direction For Question : (76-77)

A box contains cards numbered 11 to 123. A card is drawn at random from the box.

76. What is the probability that the number of the drawn card is a perfect square number ?

(a) $\frac{91}{113}$

(b) $\frac{8}{113}$

(c) $\frac{105}{113}$

(d) $\frac{22}{113}$

Sol : www.cbse.site/ma/om175

77. What is the probability that the number of the drawn card is a multiple of 7?

(a) $\frac{91}{113}$

(b) $\frac{16}{113}$

(c) $\frac{105}{113}$

(d) $\frac{22}{113}$

Sol : www.cbse.site/ma/om175

78. A box contains 12 balls of which some are red in colour. If 6 more red balls are put in the box and a

ball is drawn at random the probability of drawing a red ball doubles than what it was before. What is the number of red balls in the bag?

(a) 3

(b) 4

(c) 5

(d) 6

Sol : www.cbse.site/ma/om176

79. An integer is chosen between 70 and 100. What is the probability that it is a prime number?

(a) $\frac{18}{29}$

(b) $\frac{23}{29}$

(c) $\frac{11}{29}$

(d) $\frac{6}{29}$

Sol : www.cbse.site/ma/om177

80. An integer is chosen between 70 and 100. What is the probability that it is divisible by 7?

(a) $\frac{18}{29}$

(b) $\frac{21}{29}$

(c) $\frac{11}{29}$

(d) $\frac{4}{29}$

Sol : www.cbse.site/ma/om178

81. What is the probability that 5 Sundays occur in the month of November of a randomly selected year.

(a) $\frac{5}{7}$

(b) $\frac{2}{7}$

(c) $\frac{4}{7}$

(d) $\frac{3}{7}$

Sol : www.cbse.site/ma/om179

82. Two dice are tossed simultaneously. What is the probability of getting the sum of two numbers more than 9?

(a) $\frac{1}{4}$

(b) $\frac{3}{4}$

(c) $\frac{1}{2}$

(d) $\frac{1}{6}$

Sol : www.cbse.site/ma/om180

83. Two dice are tossed simultaneously. What is the probability of getting the sum of two numbers more than 9?

(a) $\frac{1}{4}$

(b) $\frac{3}{4}$

(c) $\frac{1}{2}$

(d) $\frac{1}{6}$

Sol : www.cbse.site/ma/om181

84. In a family of three children, what is the probability of having at least two boys.

(a) $\frac{1}{2}$

(b) $\frac{1}{3}$

(c) $\frac{3}{4}$

(d) $\frac{1}{4}$

Sol : www.cbse.site/ma/om182

Direction For Question : (85-86)

A child has a die whose six faces show the letters as shown below:

A	B	C	D	E	A

The die is thrown once.

85. What is the probability of getting A?

(a) $\frac{1}{6}$

(b) $\frac{1}{3}$

(c) $\frac{5}{6}$

(d) $\frac{1}{2}$

Sol : www.cbse.site/ma/om183

86. What is the probability of getting D?

(a) $\frac{1}{6}$

(b) $\frac{1}{3}$

(c) $\frac{5}{6}$

(d) $\frac{1}{2}$

Sol : www.cbse.site/ma/om183

87. A game consists of tossing a coin 3 times and noting the outcome each time. If getting the same result in all the tosses is a success, what is the probability of losing the game?

(a) $\frac{1}{3}$

(b) $\frac{1}{4}$

(c) $\frac{2}{3}$
(d) $\frac{3}{4}$

Sol : www.cbse.site/ma/om184

88. A die is thrown once. What is the probability of getting a number which (i) is a prime number (ii) lies between 2 and 6?
(a) $\frac{1}{6}$
(b) $\frac{1}{3}$
(c) $\frac{5}{6}$
(d) $\frac{1}{2}$

Sol : www.cbse.site/ma/om185

89. A die is thrown twice. What is the probability that 5 will come up at least once?
(a) $\frac{13}{18}$
(b) $\frac{25}{36}$
(c) $\frac{5}{18}$
(d) $\frac{11}{36}$

Sol : www.cbse.site/ma/om186

90. Two different dice are tossed together. What is the probability of getting a doublet?
(a) $\frac{1}{6}$
(b) $\frac{5}{6}$
(c) $\frac{1}{3}$
(d) $\frac{2}{3}$

Sol : www.cbse.site/ma/om187

Direction For Question : (91-92)

An integer is chosen at random between 1 and 100.

91. What is the probability that it is divisible by 8.
(a) $\frac{2}{27}$
(b) $\frac{4}{49}$
(c) $\frac{10}{27}$
(d) $\frac{6}{49}$

Sol : www.cbse.site/ma/om188

92. What is the probability that it is not divisible by 8.
(a) $\frac{2}{27}$
(b) $\frac{43}{49}$
(c) $\frac{10}{27}$
(d) $\frac{6}{49}$

Sol : www.cbse.site/ma/om188

Direction For Question : (93-95)

From a pack of 52 playing cards, Jacks, Queens and Kings of red colour are removed. From the remaining, a card is drawn at random.

93. What is the probability that drawn card is a black king ?
(a) $\frac{1}{52}$
(b) $\frac{1}{23}$
(c) $\frac{1}{26}$
(d) $\frac{2}{23}$

Sol : www.cbse.site/ma/om189

94. What is the probability that drawn card is a card of red colour?
(a) $\frac{10}{23}$
(b) $\frac{1}{23}$
(c) $\frac{1}{26}$
(d) $\frac{2}{23}$

Sol : www.cbse.site/ma/om189

95. What is the probability that drawn card is a card of black colour?
(a) $\frac{1}{52}$
(b) $\frac{1}{23}$
(c) $\frac{13}{23}$
(d) $\frac{2}{23}$

Sol : www.cbse.site/ma/om189

96. A bag contains 6 red balls and some blue balls. If the probability of drawing a blue ball from the bag is twice that of a red ball, what is the number of blue balls in the bag?
(a) 10
(b) 12
(c) 14
(d) 16

Sol : www.cbse.site/ma/om190

Direction For Question : (97-99)

A bag contains cards numbered 1 to 49.

97. What is the probability that the number on the drawn card is an odd number?

(a) $\frac{1}{7}$

(b) $\frac{24}{49}$

(c) $\frac{3}{7}$

(d) $\frac{25}{49}$

Sol : www.cbse.site/ma/om191

98. What is the probability that the number on the drawn card is a multiple of 5?

(a) $\frac{1}{7}$

(b) $\frac{24}{49}$

(c) $\frac{1}{49}$

(d) $\frac{9}{49}$

Sol : www.cbse.site/ma/om191

99. What is the probability that the number on the drawn card is even prime?

(a) $\frac{1}{7}$

(b) $\frac{24}{49}$

(c) $\frac{1}{49}$

(d) $\frac{25}{49}$

Sol : www.cbse.site/ma/om191

100. Two unbiased coins are tossed simultaneously. What is the probability of getting at least one head?

(a) $\frac{1}{4}$

(b) $\frac{3}{4}$

(c) $\frac{1}{2}$

(d) 1

Sol : www.cbse.site/ma/om192

101. Two unbiased coins are tossed simultaneously. What is the probability of getting atmost one head?

(a) $\frac{1}{4}$

(b) $\frac{3}{4}$

(c) $\frac{1}{2}$

(d) 1

Sol : www.cbse.site/ma/om193

102. Three different coins are tossed together. What is the probability of getting at least two tails?

(a) $\frac{1}{4}$

(b) $\frac{5}{8}$

(c) $\frac{1}{2}$

(d) $\frac{3}{8}$

Sol : www.cbse.site/ma/om194

103. A game consists of tossing a one-rupee coin 3 times and noting the outcome each time. Ramesh will win the game if all the tosses show the same result, (i.e either all three heads or all three tails) and loses the game otherwise. What is the probability that Ramesh will lose the game?

(a) $\frac{3}{8}$

(b) $\frac{3}{4}$

(c) $\frac{5}{8}$

(d) $\frac{1}{2}$

Sol : www.cbse.site/ma/om195

104. In a single throw of a pair of different dice, what is the probability of getting a prime number on each dice ?

(a) $\frac{11}{36}$

(b) $\frac{13}{36}$

(c) $\frac{15}{36}$

(d) $\frac{1}{4}$

Sol : www.cbse.site/ma/om196

105. In a single throw of a pair of different dice, what is the probability of getting a total of 9 or 11 ?

(a) $\frac{11}{36}$

(b) $\frac{13}{36}$

(c) $\frac{15}{36}$

(d) $\frac{1}{6}$

Sol : www.cbse.site/ma/om197

Direction For Question : (106-107)

A box consists of 100 shirts of which 88 are good, 8 have minor defects and 4 have major defects. Ramesh, a shopkeeper will buy only those shirts which are good but 'Kewal' another shopkeeper will not buy shirts with major defects. A shirt is taken

out of the box at random.

106. What is the probability that Ramesh will buy the selected shirt ?
(a) $\frac{3}{25}$
(b) $\frac{22}{25}$
(c) $\frac{14}{25}$
(d) $\frac{24}{25}$

Sol : www.cbse.site/ma/om198

107. What is the probability that Kewal will buy the selected shirt ?
(a) $\frac{3}{25}$
(b) $\frac{19}{25}$
(c) $\frac{24}{25}$
(d) $\frac{24}{25}$

Sol : www.cbse.site/ma/om198

108. A box contains 100 cards marked from 1 to 100. If one card is drawn at random from the box, what is the probability that it bears a single digit number?
(a) $\frac{9}{100}$
(b) $\frac{91}{100}$
(c) $\frac{4}{25}$
(d) $\frac{11}{25}$

Sol : www.cbse.site/ma/om199

109. A box contains 100 cards marked from 1 to 100. If one card is drawn at random from the box, what is the probability that it bears a number which is divisible by 7?
(a) $\frac{9}{100}$
(b) $\frac{91}{100}$
(c) $\frac{4}{25}$
(d) $\frac{14}{100}$

Sol : www.cbse.site/ma/om200

Direction For Question : (110-111)

There are 100 cards in a bag on which numbers from 1 to 100 are written. A card is taken out from the bag at random.

110. What is the probability that the number on the selected card is divisible by 9 and is a perfect square?
(a) $\frac{3}{100}$
(b) $\frac{97}{100}$
(c) $\frac{3}{25}$
(d) $\frac{11}{25}$

Sol : www.cbse.site/ma/om201

111. What is the probability that the number on the selected card is a prime number greater than 80?
(a) $\frac{3}{100}$
(b) $\frac{97}{100}$
(c) $\frac{3}{25}$
(d) $\frac{11}{25}$

Sol : www.cbse.site/ma/om201

112. Cards numbered 2 to 101 are placed in a box. A card is selected at random from the box, what is the probability that the card selected has a number which is a perfect square?
(a) $\frac{91}{100}$
(b) $\frac{9}{100}$
(c) $\frac{21}{25}$
(d) $\frac{4}{25}$

Sol : www.cbse.site/ma/om202

Direction For Question : (113-115)

All red face cards are removed from a pack of playing cards. The remaining cards are well shuffled and then a card is drawn at random from them.

113. What is the probability that the drawn card is :
(i) a red card
(ii) a face card
(iii) a card of clubs
(a) $\frac{11}{26}$
(b) $\frac{9}{26}$
(c) $\frac{15}{26}$
(d) $\frac{5}{13}$

Sol : www.cbse.site/ma/om203

114. What is the probability that the drawn card is a face card?
(a) $\frac{33}{46}$

(b) $\frac{3}{23}$
(c) $\frac{13}{46}$
(d) $\frac{5}{13}$

Sol : www.cbse.site/ma/om203

115. What is the probability that the drawn card is a card of clubs?
(a) $\frac{33}{46}$
(b) $\frac{9}{26}$
(c) $\frac{13}{46}$
(d) $\frac{5}{13}$

Sol : www.cbse.site/ma/om203

116. The probability of selecting a red ball at random from a jar that contains only red, blue and orange balls is $\frac{1}{4}$. The probability of selecting a blue ball at random from the same jar is $\frac{1}{3}$. If the jar contains 10 orange balls, what is the total number of ball in the jar?
(a) 20
(b) 24
(c) 26
(d) 32

Sol : www.cbse.site/ma/om204

117. Two different dice are thrown together. What is the probability of getting a number greater than 3 on each die?
(a) $\frac{1}{6}$
(b) $\frac{1}{4}$
(c) $\frac{5}{36}$
(d) $\frac{3}{4}$

Sol : www.cbse.site/ma/om205

118. Two different dice are thrown together. What is the probability of getting a total of 6 or 7 of the numbers on two dice?
(a) $\frac{1}{6}$
(b) $\frac{11}{36}$
(c) $\frac{5}{36}$
(d) $\frac{3}{4}$

Sol : www.cbse.site/ma/om206

119. One card is drawn from a well shuffled deck of 52 cards. What is the probability of getting non face card?
(a) $\frac{5}{26}$
(b) $\frac{10}{13}$
(c) $\frac{13}{26}$
(d) $\frac{27}{52}$

Sol : www.cbse.site/ma/om207

120. Three coins are tossed simultaneously once. What is the probability of getting no tail?
(a) $\frac{1}{2}$
(b) $\frac{1}{8}$
(c) $\frac{3}{4}$
(d) $\frac{5}{8}$

Sol : www.cbse.site/ma/om208

121. A game consists of tossing a one-rupee coin three times and noting its outcome each time. What is the probability of getting three heads?
(a) $\frac{1}{8}$
(b) $\frac{3}{8}$
(c) $\frac{4}{8}$
(d) $\frac{5}{8}$

Sol : www.cbse.site/ma/om209

122. One card is drawn from a well-shuffled deck of 52 cards. What is the probability of getting either a king or a black cards?
(a) $\frac{7}{13}$
(b) $\frac{3}{26}$
(c) $\frac{23}{52}$
(d) $\frac{7}{26}$

Sol : www.cbse.site/ma/om210

123. Two dice are numbered 1, 2, 3, 4, 5, 6 and 1, 1, 2, 2, 3, 3 respectively. They are thrown and the sum of the numbers on them is noted. What is the probability of getting even sum :
(a) $\frac{3}{18}$
(b) $\frac{7}{36}$
(c) $\frac{5}{9}$
(d) $\frac{1}{2}$

Sol : www.cbse.site/ma/om211

124. Three unbiased coins are tossed together. What is the probability of getting almost two heads?
(a) $\frac{5}{8}$
(b) $\frac{3}{8}$
(c) $\frac{7}{8}$
(d) $\frac{1}{4}$

Sol : www.cbse.site/ma/om212

125. A bag contains, white, black and red balls only. A ball is drawn at random from the bag. If the probability of getting a white ball is $\frac{3}{10}$ and that of a black ball is $\frac{2}{5}$, then what is the probability of getting a red ball?
(a) $\frac{5}{8}$
(b) $\frac{3}{10}$
(c) $\frac{1}{2}$
(d) $\frac{1}{4}$

Sol : www.cbse.site/ma/om213

126. In previous question if the bag contains 20 black balls, then what is the total number of balls in the bag?
(a) 40
(b) 50
(c) 60
(d) 70

Sol : www.cbse.site/ma/om213

127. A bag contains 18 balls out of which x balls are red. If one ball is drawn at random from the bag, what is the probability that it is not red ?
(a) $\frac{x-18}{x+18}$
(b) $\frac{18-x}{18}$
(c) $\frac{18}{x+18}$
(d) $\frac{x}{18}$

Sol : www.cbse.site/ma/om214

128. In previous question if 2 more red balls are put in the bag, the probability of drawing a red ball will be $\frac{9}{8}$ times the probability of drawing a red ball in the first case. What is the value of x?
(a) 2
(b) 4
(c) 6
(d) 8

Sol : www.cbse.site/ma/om214

129. Cards numbered 1 to 30 are put in a bag. A card is drawn at random. What is the probability that the drawn card is prime number greater than seven?
(a) $\frac{1}{15}$
(b) $\frac{1}{6}$
(c) $\frac{1}{12}$
(d) $\frac{1}{5}$

Sol : www.cbse.site/ma/om215

130. Two dice are thrown at the same time. What is the probability of getting sum of two numbers appearing on both the dice is 8 ?
(a) $\frac{1}{6}$
(b) $\frac{1}{12}$
(c) $\frac{1}{18}$
(d) $\frac{5}{36}$

Sol : www.cbse.site/ma/om216

Direction For Question : (131-132)

Five cards, ten, Jack, Queen, King and Ace of diamonds are well shuffled. One card is picked up from them.

131. What is the probability that the drawn card is Queen?
(a) $\frac{2}{4}$
(b) $\frac{1}{5}$
(c) $\frac{3}{5}$
(d) $\frac{4}{5}$

Sol : www.cbse.site/ma/om217

132. If Queen is put aside, then what is the probability that the second card drawn is an ace?
(a) $\frac{1}{5}$
(b) $\frac{1}{4}$
(c) $\frac{3}{5}$
(d) $\frac{4}{5}$

Sol : www.cbse.site/ma/om217

133. From all the two digit numbers a number is chosen at random. What is the probability that the chosen number is a multiple of 7?

(a) $\frac{7}{10}$

(b) $\frac{13}{90}$

(c) $\frac{5}{10}$

(d) $\frac{17}{90}$

Sol : www.cbse.site/ma/om218

134. A box contains cards, number 1 to 90. A card is drawn at random from the box. What is the probability that the selected card bears a two digit number?

(a) $\frac{9}{10}$

(b) $\frac{7}{18}$

(c) $\frac{8}{9}$

(d) $\frac{5}{16}$

Sol : www.cbse.site/ma/om219

135. A box contains cards, number 1 to 90. A card is drawn at random from the box. What is the probability that the selected card bears a perfect square number?

(a) $\frac{9}{10}$

(b) $\frac{1}{10}$

(c) $\frac{8}{9}$

(d) $\frac{5}{16}$

Sol : www.cbse.site/ma/om220

136. Two different dice are thrown together. What is the probability that the number obtained have a product less than 16?

(a) $\frac{13}{18}$

(b) $\frac{5}{12}$

(c) $\frac{2}{3}$

(d) $\frac{13}{36}$

Sol : www.cbse.site/ma/om221

137. What is the probability that a randomly taken leap year has 52 Sundays?

(a) $\frac{52}{365}$

(b) $\frac{5}{7}$

(c) $\frac{52}{366}$

(d) $\frac{53}{366}$

Sol : www.cbse.site/ma/om222

138. Jayanti throws a pair of dice and records the product of the numbers appearing on the dice. Pihu throws 1 dice and records the squares the number that appears on it. Who has the better chance of getting the number 36? Justify?

(a) Pihu has better chances because, her probability of getting square 36 is higher than Jayanti.

(b) Jayanti has better chances because, her probability of getting square 36 is higher than Pihu.

(c) Pihu has better chances because, her probability of getting square 36 is lesser than Jayanti.

(d) Jayanti has better chances because, her probability of getting square 36 is lesser than Pihu.

Sol : www.cbse.site/ma/om223

139. The probability of selecting a blue marble at random from a jar that contains only blue, black and green marbles is $\frac{1}{5}$. The probability of selecting a black marble at random from the same jar is $\frac{1}{4}$. If the jar contains 11 green marbles, what is the total number of marbles in the jar?

(a) 20

(b) 25

(c) 30

(d) 35

Sol : www.cbse.site/ma/om224

Direction For Question : (140-142)

Cards marked with numbers 3, 4, 5, ...50 are placed in a bag and mixed thoroughly. One card is drawn at random from the bag.

140. What is the probability that number on the card drawn is divisible by 7?

(a) $\frac{23}{48}$

(b) $\frac{7}{48}$

(c) $\frac{1}{6}$

(d) $\frac{1}{8}$

Sol : www.cbse.site/ma/om225

141. What is the probability that number on the card drawn is a perfect square?

(a) $\frac{23}{48}$

(b) $\frac{7}{48}$

(c) $\frac{1}{6}$

(d) $\frac{1}{8}$

Sol : www.cbse.site/ma/om225

142. What is the probability that number on the card drawn is a multiple of 6?

(a) $\frac{23}{48}$

(b) $\frac{7}{48}$

(c) $\frac{1}{6}$

(d) $\frac{1}{8}$

Sol : www.cbse.site/ma/om225

Direction For Question : (143-146)

All the red face cards are removed from a pack of 52 playing cards. A card is drawn at random from the remaining cards, after reshuffling them.

143. What is the probability that the drawn card is of red colour?

(a) $\frac{7}{26}$

(b) $\frac{10}{23}$

(c) $\frac{5}{13}$

(d) $\frac{46}{52}$

Sol : www.cbse.site/ma/om226

144. What is the probability that the drawn card is a queen?

(a) $\frac{1}{23}$

(b) $\frac{10}{23}$

(c) $\frac{2}{23}$

(d) $\frac{3}{23}$

Sol : www.cbse.site/ma/om226

145. What is the probability that the drawn card is an ace?

(a) $\frac{1}{23}$

(b) $\frac{10}{23}$

(c) $\frac{2}{23}$

(d) $\frac{3}{23}$

Sol : www.cbse.site/ma/om226

146. What is the probability that the drawn card is a face card?

(a) $\frac{1}{23}$

(b) $\frac{10}{23}$

(c) $\frac{2}{23}$

(d) $\frac{3}{23}$

Sol : www.cbse.site/ma/om226

147. A box contains 20 cards from 1 to 20. A card is drawn at random from the box. What is the probability that the number on the drawn card is divisible by 2 or 3?

(a) $\frac{5}{20}$

(b) $\frac{3}{20}$

(c) $\frac{4}{20}$

(d) $\frac{17}{20}$

Sol : www.cbse.site/ma/om227

Direction For Question : (148-151)

A box contains cards bearing numbers from 6 to 70. One card is drawn at random from the box.

148. What is the probability that it bears a one digit number ?

(a) $\frac{4}{65}$

(b) $\frac{1}{5}$

(c) $\frac{12}{65}$

(d) $\frac{3}{13}$

Sol : www.cbse.site/ma/om228

149. What is the probability that it bears a number divisible by 5?

(a) $\frac{9}{65}$

(b) $\frac{1}{5}$

(c) $\frac{12}{65}$

(d) $\frac{3}{13}$

Sol : www.cbse.site/ma/om228

150. What is the probability that it bears an odd number

less than 30?

(a) $\frac{4}{65}$

(b) $\frac{12}{65}$

(c) $\frac{9}{70}$

(d) $\frac{13}{70}$

Sol : www.cbse.site/ma/om228

151. What is the probability that it bears a composite number between 50 and 70?

(a) $\frac{4}{65}$

(b) $\frac{3}{13}$

(c) $\frac{9}{70}$

(d) $\frac{13}{70}$

Sol : www.cbse.site/ma/om228

Direction For Question : (152-154)

A bag contains 15 balls of which x are blue and the remaining are red. If the number of red balls are increased by 5, the probability of drawing the red balls doubles.

152. What is probability of drawing the red ball?

(a) $\frac{3}{5}$

(b) $\frac{1}{5}$

(c) $\frac{4}{5}$

(d) $\frac{2}{5}$

Sol : www.cbse.site/ma/om229

153. What is probability of drawing the blue ball?

(a) $\frac{3}{5}$

(b) $\frac{1}{5}$

(c) $\frac{4}{5}$

(d) $\frac{2}{5}$

Sol : www.cbse.site/ma/om229

154. What is probability of drawing the blue ball if of 5 extra red balls are actually added ?

(a) $\frac{3}{5}$

(b) $\frac{1}{5}$

(c) $\frac{4}{5}$

(d) $\frac{2}{5}$

Sol : www.cbse.site/ma/om229

Direction For Question : (155-157)

Three digit number are made using the digits 4, 5, 9 (without repetition). A number among them is selected at random,

155. What is the probability that the number will be a multiple of 5 ?

(a) $\frac{1}{3}$

(b) $\frac{5}{6}$

(c) $\frac{2}{3}$

(d) $\frac{1}{6}$

Sol : www.cbse.site/ma/om230

156. What is the probability that the number will be a multiple of 9

(a) $\frac{1}{3}$

(b) $\frac{5}{6}$

(c) $\frac{2}{3}$

(d) 1

Sol : www.cbse.site/ma/om230

157. What is the probability that the number will end with 9 ?

(a) $\frac{1}{3}$

(b) $\frac{5}{6}$

(c) $\frac{2}{3}$

(d) 1

Sol : www.cbse.site/ma/om230

158. A number x is selected at random from the numbers 1, 2, 3 and 4. Another number y is selected at random from the numbers 1, 4, 9 and 16. What is the probability that product of x and y is less than 16?

(a) $\frac{1}{2}$

(b) $\frac{5}{16}$

(c) $\frac{9}{16}$

(d) $\frac{7}{16}$

Sol : www.cbse.site/ma/om231

159. Two different dice are rolled together once. What is the probability of numbers coming on the tops whose product is a perfect square?

(a) $\frac{7}{36}$

(b) $\frac{7}{9}$

(c) $\frac{2}{9}$

(d) $\frac{5}{36}$

Sol : www.cbse.site/ma/om232

Direction For Question : (160-161)

A box contains 125 shirts of which 110 are good 12 have minor defects and 3 have major defects. Ram Lal will buy only those shirts which are good while Naveen will reject only those which have major defects. A shirt is taken out at random from the box.

160. What is the probability that Ram Lal will buy it?

(a) $\frac{23}{25}$

(b) $\frac{22}{25}$

(c) $\frac{88}{125}$

(d) $\frac{112}{125}$

Sol : www.cbse.site/ma/om233

161. What is the probability that Naveen will buy it?

(a) $\frac{122}{125}$

(b) $\frac{22}{25}$

(c) $\frac{88}{125}$

(d) $\frac{112}{125}$

Sol : www.cbse.site/ma/om233

162. A box contains 90 discs which are numbered 1 to 90. If one disc is drawn at random from the box, what is the probability that it bears a two digit number?

(a) $\frac{9}{10}$

(b) $\frac{1}{9}$

(c) $\frac{11}{90}$

(d) $\frac{8}{90}$

Sol : www.cbse.site/ma/om233

163. A box contains 90 discs which are numbered 1 to 90. If one disc is drawn at random from the box, what is the probability that it bears number divisible by 5.

(a) $\frac{1}{5}$

(b) $\frac{1}{9}$

(c) $\frac{11}{90}$

(d) $\frac{8}{90}$

Sol : www.cbse.site/ma/om234

164. Two different dice are thrown together. What is the probability that the numbers obtained have even sum?

(a) 0.50

(b) 0.3

(c) 0.8

(d) 0

Sol : www.cbse.site/ma/om235

165. Two different dice are thrown together. What is the probability that the numbers obtained have even product.

(a) 0.50

(b) 0.30

(c) 0.65

(d) 0.75

Sol : www.cbse.site/ma/om236

Direction For Question : (166-169)

From a deck of 52 playing cards, Jacks and kings of red colour and Queen and Aces of black colour are removed. The remaining cards are mixed and a card is drown at random.

166. What is the probability that the drawn card is a black queen ?

(a) $\frac{1}{2}$

(b) $\frac{1}{4}$

(c) 0

(d) $\frac{3}{52}$

Sol : www.cbse.site/ma/om237

167. What is the probability that the drawn card is a card of red colour?

(a) $\frac{1}{2}$

(b) $\frac{1}{4}$

(c) 0

(d) $\frac{3}{52}$

Sol : www.cbse.site/ma/om237

168. What is the probability that the drawn card is a Jack of black colour ?

(a) $\frac{1}{2}$

(b) $\frac{1}{4}$
(c) $\frac{1}{22}$
(d) $\frac{3}{52}$

Sol : www.cbse.site/ma/om237

169. What is the probability that the drawn card is face card ?
(a) $\frac{1}{2}$
(b) $\frac{1}{4}$
(c) $\frac{3}{22}$
(d) $\frac{7}{22}$

Sol : www.cbse.site/ma/om237

Direction For Question : (170-173)

Cards on which numbers 1, 2, 3 ..... 100 are written (one number on one card and no number is repeated), put in a bag and are mixed thoroughly. A card is drawn at random from the bag.

170. What is the probability that card taken out has an even number?
(a) $\frac{1}{2}$
(b) $\frac{51}{100}$
(c) $\frac{49}{100}$
(d) 0

Sol : www.cbse.site/ma/om238

171. What is the probability that card taken out has a number which is a multiple of 13?
(a) $\frac{1}{2}$
(b) $\frac{51}{100}$
(c) $\frac{49}{100}$
(d) $\frac{7}{100}$

Sol : www.cbse.site/ma/om238

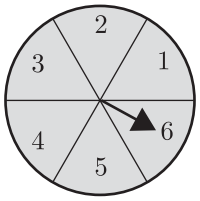
172. What is the probability that card taken out has a perfect square number?
(a) $\frac{1}{2}$
(b) $\frac{1}{10}$
(c) $\frac{49}{100}$
(d) $\frac{7}{10}$

Sol : www.cbse.site/ma/om238

173. What is the probability that card taken out has a prime number less than 20?
(a) $\frac{1}{2}$
(b) $\frac{51}{100}$
(c) $\frac{49}{100}$
(d) $\frac{2}{25}$

Sol : www.cbse.site/ma/om238

174. In Figure a disc on which a player spins an arrow twice. The fraction $\frac{a}{b}$ is formed, where a is the number of sector on which arrow stops on the first spin and 'b' is the number of the sector in which the arrow stops on second spin, On each spin, each sector has equal chance of selection by the arrow. What is the probability that the fraction $\frac{a}{b} > 1$



(a) $\frac{5}{12}$
(b) $\frac{7}{12}$
(c) $\frac{7}{18}$
(d) $\frac{5}{18}$

Sol : www.cbse.site/ma/om239

175. A bag contains 25 cards numbered from 1 to 25. A card is drawn at random from the bag. What is the probability that the number on the drawn card is :
(i) divisible by 3 or 5
(ii) a perfect square number.
(a) $\frac{2}{5}$
(b) $\frac{12}{25}$
(c) $\frac{3}{5}$
(d) $\frac{13}{25}$

Sol : www.cbse.site/ma/om240

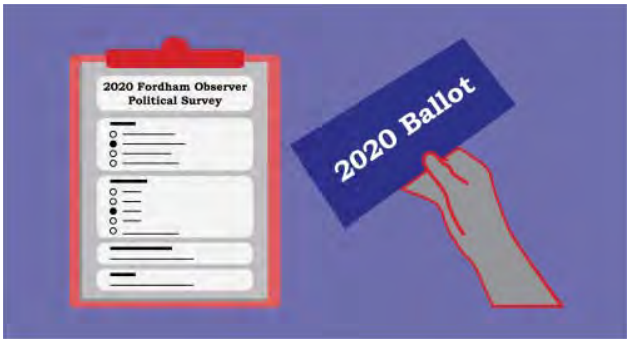
176. A dice is rolled twice. What is the probability that 5 will not come up either time?
(a) $\frac{5}{18}$
(b) $\frac{25}{36}$
(c) $\frac{13}{36}$
(d) $\frac{11}{36}$

Sol : www.cbse.site/ma/om241

COMPETENCEY BASED QUESTIONS

Direction For Question : (177-181)

Political survey questions are questions asked to gather the opinions and attitudes of potential voters. Political survey questions help you identify supporters and understand what the public needs. Using such questions, a political candidate or an organization can formulate policies to gain support from these people.



A survey of 100 voters was taken to gather information on critical issues and the demographic information collected is shown in the table. One out of the 100 voters is to be drawn at random to be interviewed on the India Today News on prime time.

	Women	Men	Totals
Republican	17	20	37
Democrat	22	17	39
Independent	8	7	15
Green Party	6	3	5
Totals	53	47	100

177. What is the probability the person is a woman or a Republican ?

(a) 0.63

(b) 0.73

(c) 0.54

(d) 0.84

Sol : www.cbse.site/ma/om242

178. What is the probability the person is a Democrat ?

(a) 0.48

(b) 0.39

(c) 0.63

(d) 0.51

Sol : www.cbse.site/ma/om242

179. What is the probability the person is a Independent men ?

(a) 0.16

(b) 0.14

(c) 0.07

(d) 0.21

Sol : www.cbse.site/ma/om242

180. What is the probability the person is a Independent men or green party men ?

(a) 0.30

(b) 0.10

(c) 0.40

(d) 0.20

Sol : www.cbse.site/ma/om242

181. What is the probability the person is not a Independent Women or Republican men ?

(a) 0.72

(b) 0.94

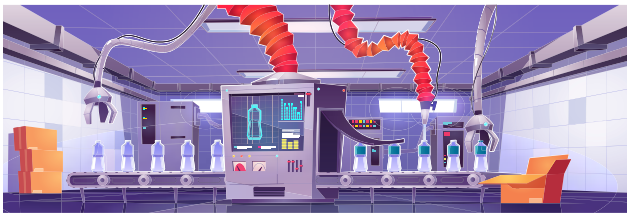
(c) 0.64

(d) 0.84

Sol : www.cbse.site/ma/om242

182. A large water bottling plant can remain at full production as long as one of its two generators is functioning. Due to past experience and the age difference between the systems, the plant manager estimates the probability of the main generator failing is 0.05, the probability of the secondary generator failing is 0.01, and the probability of both

failing is 0.007.



What is the probability the plant remains in full production today?

(a) 88%

(b) 99.3%

(c) 88.8%

(d) 99.4%

Sol : www.cbse.site/ma/om243

183. A hydrofoil is a lifting surface, or foil, that operates in water. They are similar in appearance and purpose to aerofoils used by aeroplanes. Boats that use hydrofoil technology are also simply termed hydrofoils. As a hydrofoil craft gains speed, the hydrofoils lift the boat's hull out of the water, decreasing drag and allowing greater speeds.

Inter-Island Waterways has just opened hydrofoil service between several islands. The hydrofoil is powered by two engines, one forward and one aft, and will operate if either of its two engines is functioning. Due to testing and past experience, the company knows the probability of the aft engine failing is P (aft engine fails)$= 0.05$ the probability of the forward engine failing is P (forward engine fails)$= 0.03$, and the probability that both fail is P (both engines simultaneously fail)$= 0.013$. What is the probability the hydrofoil completes its next trip?

(a) 0.980

(b) 0.988

(c) 0.987

(d) 0.972

Sol : www.cbse.site/ma/om244

184. A fire station gets an emergency call from a shopping mall in the mid-afternoon. From a study of traffic patterns, Chief fire officer DK Jain knows the probability the most direct route is clogged with traffic is 0.11, while the probability of the secondary route being clogged is 0.13. The probability both are clogged is 0.03.

What is the probability they can respond to the call unimpeded using one of these routes?

(a) 97%

(b) 98%

(c) 93%

(d) 88%

Sol : www.cbse.site/ma/om245

Direction For Question : (185-189)

Eight Ball : This is a game played on a pool table with 15 balls numbered 1 through 15 and a cue ball that is solid white. Of the 15 numbered balls, 8 are a solid (nonwhite) color and numbered 1 through 8, and seven are striped balls numbered 9 through 15.

The fifteen numbered pool balls (no cueball) are

placed in a large bowl and mixed, then one is drawn out.

185. What is the probability of drawing the eight ball ?
(a) 0
(b) $\frac{1}{15}$
(c) $\frac{2}{15}$
(d) $\frac{7}{15}$

Sol : www.cbse.site/ma/om246

186. What is the probability of drawing a number greater than fifteen ?
(a) 0
(b) $\frac{1}{15}$
(c) $\frac{2}{15}$
(d) $\frac{7}{15}$

Sol : www.cbse.site/ma/om246

187. What is the probability of drawing an even number ?
(a) 0
(b) $\frac{1}{15}$
(c) $\frac{2}{15}$
(d) $\frac{7}{15}$

Sol : www.cbse.site/ma/om246

188. What is the probability of drawing a multiple of three ?
(a) $\frac{4}{15}$
(b) $\frac{1}{3}$
(c) $\frac{8}{15}$
(d) $\frac{7}{15}$

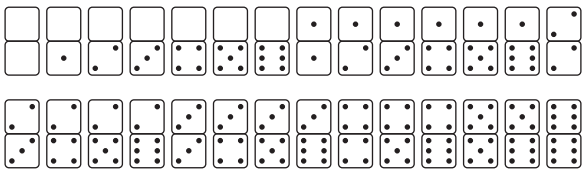
Sol : www.cbse.site/ma/om246

189. What is the probability of drawing a solid color and an even number ?
(a) $\frac{4}{15}$
(b) $\frac{1}{3}$
(c) $\frac{8}{15}$
(d) $\frac{7}{15}$

Sol : www.cbse.site/ma/om246

Direction For Question : (190-193)

Double-six Dominos : It is a game played with the 28 numbered tiles shown in the diagram.



The 28 dominos are placed in a bag, shuffled, and then one domino is randomly drawn. Give the following answer.

190. What is the probability the total number of dots on the domino is three or less ?
(a) $\frac{2}{7}$
(b) $\frac{5}{14}$
(c) $\frac{3}{14}$
(d) $\frac{3}{7}$

Sol : www.cbse.site/ma/om247

191. What is the probability the total number of dots on the domino is greater than three ?
(a) $\frac{11}{14}$
(b) $\frac{9}{14}$
(c) $\frac{13}{14}$
(d) $\frac{3}{14}$

Sol : www.cbse.site/ma/om247

192. What is the probability the total number of dots on

the domino does not have a blank half ?

(a) $\frac{3}{14}$

(b) $\frac{3}{4}$

(c) $\frac{5}{14}$

(d) $\frac{3}{7}$

Sol : www.cbse.site/ma/om247

193. What is the probability the total number of dots on the domino is not a "double" (both sides the same) ?

(a) $\frac{3}{14}$

(b) $\frac{3}{4}$

(c) $\frac{5}{14}$

(d) $\frac{3}{7}$

Sol : www.cbse.site/ma/om247

Direction For Question : (194-196)

Family Structures : For a recent year, 51% of the families in the United States had no children under the age of 18; 20% had one child; 19% had two children; 7% had three children; and 3% had four or more children.

If a family is selected at random, find the following probability.

194. What is the probability that the family has two or three children?

(a) 0.29

(b) 0.90

(c) 0.26

(d) 0.46

Sol : www.cbse.site/ma/om248

195. What is the probability that the family has more than one child?

(a) 0.29

(b) 0.90

(c) 0.26

(d) 0.46

Sol : www.cbse.site/ma/om248

196. What is the probability that the family has less than three children?

(a) 0.29

(b) 0.90

(c) 0.26

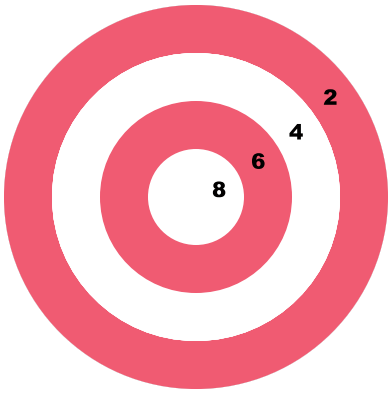
(d) 0.46

Sol : www.cbse.site/ma/om248

Direction For Question : (197-200)

Abhinav Bindra is retired sport shooter and currently India's only individual Olympic gold medalist. His gold in the 10-meter air rifle event at the 2008 Summer Olympics was also India's first Olympic gold medal since 1980. He is the first Indian to have held concurrently the world and Olympic titles for the men's 10-meter air rifle event, having earned those honors at the 2008 Summer Olympics and the 2006 ISSF World Shooting Championships. Bindra has also won nine medals at the Commonwealth Games and three gold medals at the Asian Games.

A circular dartboard has a total radius of 8 inch, with circular bands that are 2 inch wide, as shown in figure. Abhinav is still skilled enough to hit this board 100% of the time so he always score at least two points each time he throw a dart. Assume the probabilities are related to area, on the next dart that he throw.



197. What is the probability that he score at least 4 ?

(a) $\frac{5}{16}$

(b) $\frac{9}{16}$

(c) $\frac{1}{4}$

(d) $\frac{1}{16}$

Sol : www.cbse.site/ma/om249

198. What is the probability that he score at least 6 ?

(a) $\frac{5}{16}$

(b) $\frac{9}{16}$

(c) $\frac{1}{4}$

(d) $\frac{1}{16}$

Sol : www.cbse.site/ma/om249

199. What is the probability that he hit bull's eye ?

(a) $\frac{5}{16}$

(b) $\frac{9}{16}$

(c) $\frac{1}{4}$

(d) $\frac{1}{16}$

Sol : www.cbse.site/ma/om249

200. What is the probability that he score exactly 4 points ?

(a) $\frac{5}{16}$

(b) $\frac{9}{16}$

(c) $\frac{1}{4}$

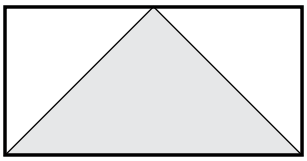
(d) $\frac{1}{16}$

Sol : www.cbse.site/ma/om249

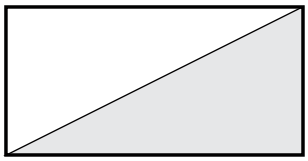
Direction For Question : (201-204)

Apurvi Singh Chandela is an Indian Shooting player who competes in the 10 metre air rifle event. She won the gold medal in the 2019 ISSF World Cup in New Delhi. She is the world champion and currently ranked number one in 10 metre air rifle shooting. She is a recipient of Arjuna award.

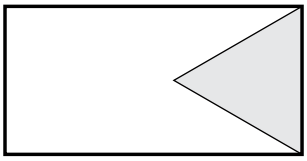
Apurvi is able to hit a 10 in. by 20 in. target 100% of the time at a range of 100 metre. Assuming the probability she hits a target is related to its area, what is the probability she hits the shaded portions shown?



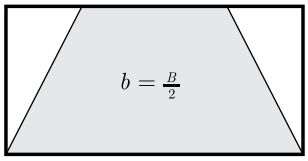
(i)



(ii)



(iii)



(iv)

201. What is the probability she hits the isosceles triangle shown in figure in (i)?

(a) $\frac{\sqrt{3}}{8}$

(b) $\frac{1}{2}$

(c) $\frac{3}{8}$

(d) $\frac{3}{4}$

Sol : www.cbse.site/ma/om250

202. What is the probability she hits the right triangle shown in figure in (ii) ?

(a) $\frac{\sqrt{3}}{8}$

(b) $\frac{1}{2}$

(c) $\frac{3}{8}$
(d) $\frac{3}{4}$

Sol : www.cbse.site/ma/om250

203. What is the probability she hits the equilateral triangle shown in figure in (iii)?
(a) $\frac{\sqrt{3}}{8}$
(b) $\frac{1}{2}$
(c) $\frac{3}{8}$
(d) $\frac{3}{4}$

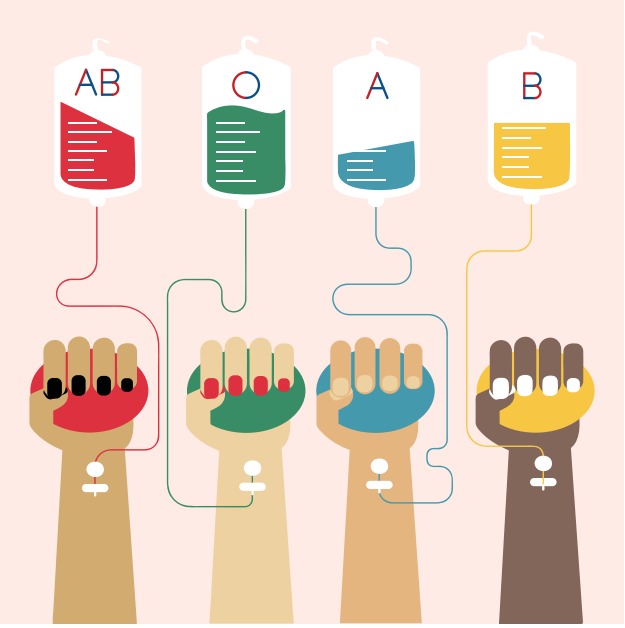
Sol : www.cbse.site/ma/om250

204. What is the probability she hits the isosceles trapezoid with $b = \frac{B}{2}$ shown in figure in (iv)?
(a) $\frac{\sqrt{3}}{8}$
(b) $\frac{1}{2}$
(c) $\frac{3}{8}$
(d) $\frac{3}{4}$

Sol : www.cbse.site/ma/om250

Direction For Question : (205-208)

Blood Group : Blood type or blood group is a medical term. It describes the type of blood a person has. It is a classification of blood based on the presence or absence of inherited antigenic substances on the surface of red blood cells (RBCs). Blood types predict whether a serious reaction will occur in a blood transfusion.



In a sample of 50 people, 21 had type O blood, 22 had type A blood, 5 had type B blood, and 2 had type AB blood. Set up a frequency distribution and find the following probabilities.

205. What is the probability that a person has type O blood ?
(a) 0.14
(b) 0.42
(c) 0.96
(d) 0.54

Sol : www.cbse.site/ma/om251

206. What is the probability that a person has type A or type B blood ?
(a) 0.14
(b) 0.42
(c) 0.96
(d) 0.54

Sol : www.cbse.site/ma/om251

207. What is the probability that a person has neither type A nor type O blood ?
(a) 0.14
(b) 0.42
(c) 0.96
(d) 0.54

Sol : www.cbse.site/ma/om251

208. What is the probability that a person does not have type AB blood ?
(a) 0.14
(b) 0.42
(c) 0.96
(d) 0.54

Sol : www.cbse.site/ma/om251

Direction For Question : (209-212)

Computers in Elementary Schools : Computer-based learning (CBL) refers to any teaching methodology that makes use of computers for information transmission or input. At an elementary school level, computer applications can be used to display multimedia lesson plans or students can input examination answers into a computer to facilitate grading and evaluation. Multimedia formats and applications that allow students to pause content are especially valuable in early childhood education especially since students are coming to school with different competencies, learning styles and speeds for absorbing information.

Total 1000 elementary and secondary schools of Rajasthan were classified by the number of computers they had.

Computers	1–10	11–20	21–50	51–100	100 more
Schools	250	210	290	170	80

Choose one school at random and find the following probability.

209. What is the probability that it has 50 or fewer computers?
(a) 0.25
(b) 0.08
(c) 0.75
(d) 0.46

Sol : www.cbse.site/ma/om252

210. What is the probability that it has more than 100 computers?
(a) 0.25
(b) 0.08
(c) 0.75
(d) 0.46

Sol : www.cbse.site/ma/om252

211. What is the probability that it has no more than 20 computers?
(a) 0.25
(b) 0.08
(c) 0.75
(d) 0.46

Sol : www.cbse.site/ma/om252

212. What is the probability that it has more than 50 computers?
(a) 0.25
(b) 0.08
(c) 0.75
(d) 0.46

Sol : www.cbse.site/ma/om252

Direction For Question : (213-216)

Hospital Stays : Hospital records indicated that maternity patients stayed in the hospital for the number of days shown in the distribution.

Number of days stayed	Frequency
3	13
4	22
5	45
6	14
7	6
	100

213. What is the probability that a patient stayed exactly 5 days?
(a) 0.45
(b) 0.80
(c) 0.35
(d) 0.65

Sol : www.cbse.site/ma/om253

214. What is the probability that a patient stayed less than 6 days?
(a) 0.45
(b) 0.80
(c) 0.35
(d) 0.65

Sol : www.cbse.site/ma/om253

215. What is the probability that a patient stayed at most 4 days?
(a) 0.45
(b) 0.80
(c) 0.35
(d) 0.65

Sol : www.cbse.site/ma/om253

216. What is the probability that a patient stayed at least 5 days?
(a) 0.45
(b) 0.80
(c) 0.35
(d) 0.65

Sol : www.cbse.site/ma/om253

Direction For Question : (217-220)

Insurance : An insurance company selected 1000 drivers at random in a particular city to determine a relationship between age and accidents. The data obtained are listed in following table.

Age	0	1	2	3	Over 3
Under 20	50	62	53	35	20
20–29	64	93	67	40	36
30–39	82	68	32	14	4
40–49	38	32	20	7	3
Over 49	43	50	35	28	24

Compute the probabilities of the following events for a driver chosen at random in the city.

217. What is the probability of being under 20 years old and having exactly three accidents in 1 year ?
(a) 0.309
(b) 0.277
(c) 0.350
(d) 0.118

Sol : www.cbse.site/ma/om254

218. What is the probability of being 30–39 years old and having one or more accidents in 1 year?
(a) 0.309
(b) 0.277
(c) 0.350
(d) 0.118

Sol : www.cbse.site/ma/om254

219. What is the probability of having no accidents in 1 year ?
(a) 0.309
(b) 0.277
(c) 0.350
(d) 0.118

Sol : www.cbse.site/ma/om254

220. What is the probability of being under 20 years old or having exactly three accidents in 1 year?
(a) 0.309
(b) 0.277
(c) 0.350
(d) 0.118

Sol : www.cbse.site/ma/om254

Direction For Question : (221-225)

Cards on which numbers 1, 2, 3 ..... 100 are written (one number on one card and no number is repeated), put in a bag and are mixed thoroughly. A card is drawn at random from the bag. Find the following probability.

221. What is the probability that card taken out has a odd number ?
(a) 0.25
(b) 0.49
(c) 0.50
(d) 0.51

Sol : www.cbse.site/ma/om255

222. What is the probability that card taken out has a two digit odd number ?
(a) 0.23
(b) 0.45
(c) 0.56
(d) 0.34

Sol : www.cbse.site/ma/om255

223. What is the probability that card taken out has a odd number which is multiple of 11?
(a) 0.05
(b) 0.10
(c) 0.12
(d) 0.06

Sol : www.cbse.site/ma/om255

224. What is the probability that card taken out has an odd number which is not less than 70 ?
(a) 0.13
(b) 0.14
(c) 0.12
(d) 0.15

Sol : www.cbse.site/ma/om255

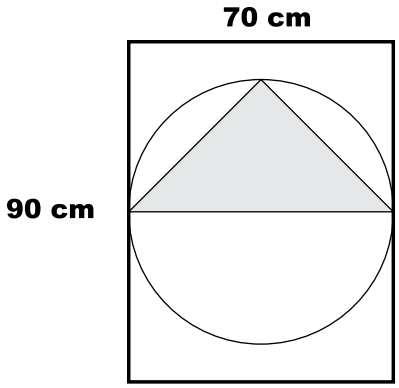
225. What is the probability that card taken out has an odd number which is not multiple of 11 ?
(a) 0.25
(b) 0.50
(c) 0.40
(d) 0.45

Sol : www.cbse.site/ma/om255

Direction For Question : (226-229)

Deepika Kumari is an Indian athlete who competes in the event of archery, is currently ranked World No. 9, and is a former world number one. She won a gold medal in the 2010 Commonwealth games in the women's individual recurve event. She also won a gold medal in the same competition in the women's team recurve event along with Dola Banerjee and Bombayala Devi. Kumari qualified for the 2012 Summer Olympics in London, where she competed in the Women's Individual and Women's team events, finishing in eighth place in the latter.

Deepika can hit the rectangular target shown 100% of the time at a range of 80 m. Assuming the probability the target is hit is related to its area, answer the following.



226. What is the probability the Deepika hits within the triangle ?

(a) $\frac{7}{36}$

(b) $\frac{11}{18}$

(c) $\frac{5}{12}$

(d) $\frac{7}{18}$

Sol : www.cbse.site/ma/om256

227. What is the probability the Deepika hits within the circle ?

(a) $\frac{7}{36}$

(b) $\frac{11}{18}$

(c) $\frac{5}{12}$

(d) $\frac{7}{18}$

Sol : www.cbse.site/ma/om256

228. What is the probability the Deepika hits within the circle but outside the triangle ?

(a) $\frac{7}{36}$

(b) $\frac{11}{18}$

(c) $\frac{5}{12}$

(d) $\frac{7}{18}$

Sol : www.cbse.site/ma/om256

229. What is the probability the Deepika hits within the rectangle but outside the circle ?

(a) $\frac{7}{36}$

(b) $\frac{11}{18}$

(c) $\frac{5}{12}$

(d) $\frac{7}{18}$

Sol : www.cbse.site/ma/om256

230. Remdesivir was the first drug approved by the FDA for treating the SARS-CoV-2 virus. It is indicated for treatment of COVID-19 disease in hospitalized adults and children aged 12 years and older who weigh at least 40 kg.

In a medical experiment, a Remdesivir is found to help 2,400 out of 4,000 people. If a doctor prescribes the Remdesivir for a particular patient, what is the approximate empirical probability that the patient will be helped?

(a) 0.5

(b) 0.6

(c) 0.7

(d) 0.8

Sol : www.cbse.site/ma/om257

231. Out of 460 times at bat, a baseball player gets 207 hits. What is the approximate empirical probability

that the player will get a hit next time at bat?

(a) 0.35
(b) 0.45
(c) 0.55
(d) 0.65

Sol : www.cbse.site/ma/om258

Direction For Question : (232-236)

In two dice game, the player take turns to roll both dice, they can roll as many times as they want in one turn. A player scores the sum of the two dice thrown and gradually reaches a higher score as they continue to roll. If a single number 1 is thrown on either die, the score for that whole turn is lost. Two dice are thrown simultaneously.

232. What is the probability of getting the sum as an even number ?
(a) $\frac{3}{4}$
(b) $\frac{1}{2}$
(c) $\frac{1}{4}$
(d) $\frac{5}{8}$

Sol : www.cbse.site/ma/om259

233. What is the probability of getting the sum as a prime number ?
(a) $\frac{5}{12}$
(b) $\frac{1}{6}$
(c) $\frac{7}{12}$
(d) $\frac{11}{12}$

Sol : www.cbse.site/ma/om259

234. What is the probability of getting the sum of atleast 10?
(a) $\frac{5}{12}$
(b) $\frac{5}{6}$
(c) $\frac{1}{6}$
(d) $\frac{7}{12}$

Sol : www.cbse.site/ma/om259

235. What is the probability of getting a doublet of even number ?
(a) $\frac{1}{12}$
(b) $\frac{5}{12}$
(c) $\frac{11}{12}$
(d) $\frac{7}{12}$

Sol : www.cbse.site/ma/om259

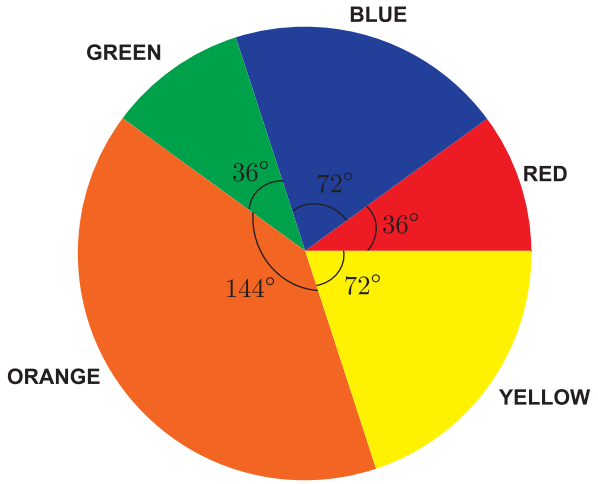
236. What is the probability of getting a product of numbers greater than 16?
(a) $\frac{7}{36}$
(b) $\frac{2}{9}$
(c) $\frac{5}{18}$
(d) $\frac{11}{36}$

Sol : www.cbse.site/ma/om259

Direction For Question : (237-241)

A survey was taken at a high school, and the results were put in a circle graph. The students were asked to list their favourite colours. The measurement of each central angle is shown. If a person is chosen at

random from the school, find the probability of each response.



237. What is the probability of favourite colour being red ?

(a) 0.1
(b) 0.2
(c) 0.3
(d) 0.4

Sol : www.cbse.site/ma/om260

238. What is the probability of favourite colour being blue or green ?

(a) 0.1
(b) 0.2
(c) 0.3
(d) 0.4

Sol : www.cbse.site/ma/om260

239. What is the probability of favourite colour not being red or blue?

(a) 0.35
(b) 0.70
(c) 0.15
(d) 0.50

Sol : www.cbse.site/ma/om260

240. What is the probability of favourite colour not being orange or green ?

(a) 0.65
(b) 0.75
(c) 0.25
(d) 0.50

Sol : www.cbse.site/ma/om260

241. What is the probability of favourite colour being red or blue?

(a) 0.2
(b) 0.3
(c) 0.1
(d) 0.4

Sol : www.cbse.site/ma/om260

Direction For Question : (242-246)

A game at a stall in new year carnival involves spinning a wheel first as a first step to complete the game with certain rules. If the wheel stops at a particular number, then the player is allowed to roll a 6 faced unbiased dice.

Rules of Game:

(i) If the wheel stops at a particular number, then the player is allowed to roll a unbiased dice.

(ii) If the wheel stops at any other number, player get to try again and only one extra try allowed.

(ii) If player reach the next stage and roll a dice, he may get a prize depending on the number on dice.

242. What is the probability of getting an even number on the wheel?

(a) $\frac{1}{4}$
(b) $\frac{1}{2}$
(c) $\frac{1}{8}$
(d) $\frac{1}{16}$

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Sol : www.cbse.site/ma/om261

243. If getting an odd number on the wheel allows a player to roll the die, then what is the probability of his rolling the die ?

(a) $\frac{1}{4}$
(b) $\frac{1}{2}$
(c) $\frac{1}{8}$
(d) $\frac{1}{16}$

Sol : www.cbse.site/ma/om261

244. If the player is allowed to roll the dice and getting a number greater than 4 entitles him to get prize, what is the probability of his winning the prize?

(a) $\frac{3}{4}$
(b) $\frac{1}{6}$
(c) $\frac{1}{3}$
(d) $\frac{2}{3}$

Sol : www.cbse.site/ma/om261

245. If getting a square number on the wheel allows a player to roll the dice, then what is the probability of his rolling the dice ?

(a) $\frac{1}{4}$
(b) $\frac{1}{2}$
(c) $\frac{1}{3}$
(d) $\frac{2}{3}$

Sol : www.cbse.site/ma/om261

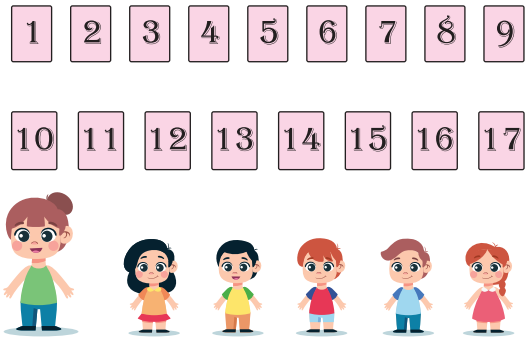
246. If the player is allowed to roll the die and getting a prime number on die entitles him to get prize, then what is the probability of his winning the prize?

(a) $\frac{1}{4}$
(b) $\frac{1}{2}$
(c) $\frac{1}{3}$
(d) $\frac{1}{6}$

Sol : www.cbse.site/ma/om261

Direction For Question : (247-251)

Five friends and one of their mother are having a picnic. The mother deicide to play card game. 17 cards numbered 1, 2, 3 ... 17 are put in a box and mixed thoroughly. The mother asks each boy to draw a card and after each draw she shows some magic tricks based on card number.



247. What is the probability of drawing an odd number card in the first draw by the first boy ?

(a) $\frac{8}{17}$
(b) $\frac{9}{17}$
(c) $\frac{10}{17}$
(d) $\frac{11}{17}$

Sol : www.cbse.site/ma/om262

248. Now in second draw, card drawn in first draw is replaced. What is the probability of drawing a prime number card by the second boy?

(a) $\frac{6}{17}$
(b) $\frac{9}{17}$
(c) $\frac{7}{17}$
(d) $\frac{11}{17}$

Sol : www.cbse.site/ma/om262

249. If in second draw, boy got number 2 and the card is not replaced, what is the probability of drawing a card bearing a multiple of 3 greater than 5 by the third boy?

(a) $\frac{1}{4}$
(b) $\frac{1}{3}$
(c) $\frac{2}{3}$
(d) $\frac{5}{6}$

Sol : www.cbse.site/ma/om262

250. If the card is replaced after the third draw, what is the probability of drawing a card bearing a number greater than 17 by the fourth boy ?

(a) 0.25
(b) 0.2
(c) 0

(d) 1

Sol : www.cbse.site/ma/om262

251. If the card is replaced after the fourth draw, what is the probability of drawing a card bearing a multiple of 3 or 7 by the fifth boy?:

(a) $\frac{6}{16}$

(b) $\frac{7}{16}$

(c) $\frac{8}{17}$

(d) $\frac{9}{17}$

Sol : www.cbse.site/ma/om262

SELF TEST QUESTIONS

252. If the probability of wining a game is 0.07, what is the probability of losing it?

(a) 0.14

(b) 0.93

(c) 0.46

(d) 0.57

Sol : www.cbse.site/ma/om263

253. A die is thrown once. What is the probability of getting at most 2?

(a) $\frac{2}{3}$

(b) $\frac{1}{3}$

(c) $\frac{1}{2}$

(d) $\frac{1}{4}$

Sol : www.cbse.site/ma/om264

254. If $P(E) = 0.20$, then what is the probability of not E?

(a) 0.85

(b) 0.25

(c) 0.10

(d) 0.80

Sol : www.cbse.site/ma/om265

255. If the probability of winning a game is $\frac{5}{11}$, what is the probability of losing the game?

(a) $\frac{7}{11}$

(b) $\frac{3}{11}$

(c) $\frac{1}{11}$

(d) $\frac{6}{11}$

Sol : www.cbse.site/ma/om266

256. If E be an event such that $P(E) = \frac{3}{7}$, what is P(not E) equal to?

(a) $\frac{1}{7}$

(b) $\frac{2}{7}$

(c) $\frac{3}{7}$

(d) $\frac{4}{7}$

Sol : www.cbse.site/ma/om267

257. A bag contains lemon flavoured candies only. Shalini takes out one candy without looking into the bag. What is the probability that she takes out an orange flavoured candy?

(a) 0

(b) 0.50

(c) 0.10

(d) 0.20

Sol : www.cbse.site/ma/om268

258. If a number x is chosen a random from the number $-3, -2, -1, 0, 1, 2, 3$. What is probability that $x^2 \leq 4$?

(a) $\frac{6}{7}$

(b) $\frac{5}{7}$

(c) $\frac{2}{7}$

(d) $\frac{1}{7}$

Sol : www.cbse.site/ma/om269

259. Out of 200 bulbs in a box, 12 bulbs are defective. One bulb is taken out at random from the box. What is the probability that the drawn bulb is not defective?

(a) $\frac{3}{50}$

(b) $\frac{3}{25}$

(c) $\frac{47}{50}$

(d) $\frac{2}{25}$

Sol : www.cbse.site/ma/om270

260. A card is drawn at random from a well shuffled pack of 52 cards. What is the probability of getting neither a red card nor a queen?

(a) $\frac{6}{13}$

(b) $\frac{7}{13}$

(c) $\frac{2}{5}$

(d) $\frac{3}{5}$

Sol : www.cbse.site/ma/om271

261. A letter of English alphabet is chosen at random. What is the probability that the chosen letter is a consonant?

(a) $\frac{3}{13}$

(b) $\frac{10}{13}$

(c) $\frac{5}{26}$

(d) $\frac{21}{26}$

Sol : www.cbse.site/ma/om272

262. Cards marked with number 3, 4, 5, ..., 50 are placed in a box and mixed thoroughly. A card is drawn at random from the box. What is the probability that the selected card bears a perfect square number?

(a) $\frac{7}{8}$

(b) $\frac{1}{8}$

(c) $\frac{1}{4}$

(d) $\frac{3}{4}$

Sol : www.cbse.site/ma/om273

263. 20 tickets, on which numbers 1 to 20 are written, are mixed thoroughly and then a ticket is drawn at random out of them. What is the probability that the number on the drawn ticket is a multiple of 3 or 7?

(a) $\frac{2}{5}$

(b) $\frac{3}{5}$

(c) $\frac{1}{2}$

(d) $\frac{1}{3}$

Sol : www.cbse.site/ma/om274

264. What is the probability that a non-leap year has 53 Mondays ?

(a) $\frac{6}{7}$

(b) $\frac{1}{7}$

(c) $\frac{2}{7}$

(d) $\frac{3}{7}$

Sol : www.cbse.site/ma/om275

265. Two different dice are tossed together. What is the probability that the product of the number on the top of the dice is 6?

(a) $\frac{2}{9}$

(b) $\frac{1}{9}$

(c) $\frac{4}{9}$

(d) $\frac{5}{9}$

Sol : www.cbse.site/ma/om276

266. A game of chance consists of spinning an arrow which comes to rest pointing at one of the numbers 1, 2,

3, 4, 5, 6, 7, 8 and these are equally likely outcomes. What is the probability that the arrow will point at any factor of 8 ?

(a) $\frac{3}{8}$

(b) $\frac{5}{8}$

(c) $\frac{7}{8}$

(d) $\frac{1}{2}$

Sol : www.cbse.site/ma/om277

267. A bag contains cards numbered from 1 to 25. A card is drawn at random from the bag. What is the probability that number is divisible by both 2 and 3?

(a) $\frac{4}{25}$

(b) $\frac{2}{25}$

(c) $\frac{1}{25}$

(d) $\frac{3}{25}$

Sol : www.cbse.site/ma/om278

268. A number is selected at random from 1 to 30. What is the probability that it is a prime number?

(a) $\frac{11}{30}$

(b) $\frac{7}{30}$

(c) $\frac{13}{30}$

(d) $\frac{1}{3}$

Sol : www.cbse.site/ma/om279

269. A box contains 90 discs, numbered from 1 to 90. If one disc is drawn at random from box, what is the probability that it bears a prime number less than 23?

(a) $\frac{1}{5}$

(b) $\frac{2}{5}$

(c) $\frac{2}{45}$

(d) $\frac{4}{45}$

Sol : www.cbse.site/ma/om280

270. From the number 3, 5, 5, 7, 7, 7, 9, 9, 9, 9, one number is selected at random, what is the probability that the selected number is mean?

(a) $\frac{2}{5}$

(b) $\frac{3}{10}$

(c) $\frac{1}{10}$

(d) $\frac{7}{10}$

Sol : www.cbse.site/ma/om281

271. A die is thrown once. What is the probability of getting a prime number?

(a) $\frac{1}{2}$

(b) $\frac{1}{3}$

(c) $\frac{1}{4}$

(d) $\frac{1}{5}$

Sol : www.cbse.site/ma/om282

272. A girl calculates the probability of her winning the game in a match and What is it 0.08. What is the probability of her losing the game?

(a) 0.90

(b) 0.92

(c) 0.58

(d) 0.88

Sol : www.cbse.site/ma/om283

273. The probability of getting a bad egg in a lot of 400 eggs is 0.035. What is the number of bad eggs in the lot?

(a) 13

(b) 14

(c) 15

(d) 16

Sol : www.cbse.site/ma/om284

274. In tossing a die, what is the probability of getting an odd number or number less than 4 ?

(a) $\frac{2}{3}$

(b) $\frac{1}{3}$

(c) $\frac{2}{5}$

(d) $\frac{1}{5}$

Sol : www.cbse.site/ma/om285

275. Two different dice are tossed together. What is the probability that the sum of numbers appearing on the two dice is 5 ?

(a) $\frac{1}{9}$

(b) $\frac{1}{4}$

(c) $\frac{3}{4}$

(d) $\frac{1}{6}$

Sol : www.cbse.site/ma/om286

276. A bag contains 3 red, 4 green and 5 white candles, one candle is drawn at random from the bag, what is the probability that candle is not red?

(a) $\frac{1}{12}$

(b) $\frac{1}{6}$

(c) $\frac{1}{4}$

(d) $\frac{3}{4}$

Sol : www.cbse.site/ma/om287

277. Two dice, one blue and one grey, are thrown at the same time. What is the probability that the sum of the two numbers appearing on the top of the dice is 8 ?

(a) $\frac{31}{36}$

(b) $\frac{5}{36}$

(c) $\frac{5}{18}$

(d) $\frac{11}{18}$

Sol : www.cbse.site/ma/om288

278. A bag contains 5 red balls and some blue balls. If the probability of drawing a blue ball from the bag is thrice that of the red ball, what is the number of blue balls in the bag?

(a) 14

(b) 15

(c) 16

(d) 17

Sol : www.cbse.site/ma/om289

Direction For Question : (28-29)

A child has a die whose six faces show the letters as shown below:

$\boxed{A}$ $\boxed{A}$ $\boxed{B}$ $\boxed{C}$ $\boxed{C}$ $\boxed{C}$

The die is thrown once.

279. What is the probability of getting A?

(a) $\frac{1}{3}$

(b) $\frac{1}{6}$

(c) $\frac{5}{6}$

(d) $\frac{2}{3}$

Sol : www.cbse.site/ma/om290

280. What is the probability of getting C?

(a) $\frac{1}{3}$

(b) $\frac{1}{6}$

(c) $\frac{5}{6}$

(d) $\frac{2}{3}$

Sol : www.cbse.site/ma/om291

281. Two different dice are tossed together. What is the probability of getting a sum 10 of the numbers on the two dice?

(a) $\frac{1}{6}$

(b) $\frac{5}{6}$

(c) $\frac{1}{12}$

(d) $\frac{2}{3}$

Sol : www.cbse.site/ma/om292

282. Two unbiased coins are tossed simultaneously. What is the probability of getting no head?

(a) $\frac{1}{4}$

(b) $\frac{3}{4}$

(c) $\frac{1}{2}$

(d) 1

Sol : www.cbse.site/ma/om293

283. Three different coins are tossed together. What is the probability of getting exactly two heads?

(a) $\frac{1}{4}$

(b) $\frac{5}{8}$

(c) $\frac{7}{8}$

(d) $\frac{3}{8}$

Sol : www.cbse.site/ma/om294

284. Three different coins are tossed together. What is the probability of getting at least two heads ?

(a) $\frac{1}{4}$

(b) $\frac{1}{2}$

(c) $\frac{7}{8}$

(d) $\frac{3}{8}$

Sol : www.cbse.site/ma/om295

285. A box contains 100 cards marked from 1 to 100. If one card is drawn at random from the box, what is

the probability that it bears a number which is a perfect square?

(a) $\frac{9}{100}$

(b) $\frac{1}{10}$

(c) $\frac{4}{25}$

(d) $\frac{11}{25}$

Sol : www.cbse.site/ma/om296

286. Cards numbered 2 to 101 are placed in a box. A card is selected at random from the box, what is the probability that the card selected has an odd number which is not less than 70?

(a) $\frac{91}{100}$

(b) $\frac{9}{100}$

(c) $\frac{21}{25}$

(d) $\frac{4}{25}$

Sol : www.cbse.site/ma/om297

287. One card is drawn from a well shuffled deck of 52 cards. What is the probability of getting spade card ?

(a) $\frac{5}{26}$

(b) $\frac{10}{13}$

(c) $\frac{13}{26}$

(d) $\frac{1}{4}$

Sol : www.cbse.site/ma/om298

288. Three coins are tossed simultaneously once. What is the probability of getting at least one tail?

(a) $\frac{1}{2}$

(b) $\frac{7}{8}$

(c) $\frac{3}{4}$

(d) $\frac{5}{8}$

Sol : www.cbse.site/ma/om299

289. A game consists of tossing a one-rupee coin three times and noting its outcome each time. What is the probability of getting at least two tails?

(a) $\frac{1}{8}$

(b) $\frac{3}{8}$

(c) $\frac{4}{8}$

(d) $\frac{5}{8}$

Sol : www.cbse.site/ma/om300

290. One card is drawn from a well-shuffled deck of 52 cards. What is the probability of getting a red face card?

(a) $\frac{24}{52}$

(b) $\frac{3}{26}$

(c) $\frac{23}{52}$

(d) $\frac{7}{26}$

Sol : www.cbse.site/ma/om301

291. Three unbiased coins are tossed together. What is the probability of getting at least two heads?

(a) $\frac{5}{8}$

(b) $\frac{3}{8}$

(c) $\frac{1}{2}$

(d) $\frac{1}{4}$

Sol : www.cbse.site/ma/om302

292. Peter throws two different dice together and What is the product of the two numbers obtained. Rina throws a die and squares the number obtained. Who has the better chance to get the number 25?

(a) Peter has better chances because, his probability of getting the number 24 is higher than Rina.

(b) Rina has better chances because, her probability of getting the number 24 is higher than Peter.

(c) Peter has better chances because, his probability of getting the number 24 is lesser than Rina.

(d) Rina has better chances because, her probability of getting the number 24 is lesser than Peter.

Sol : www.cbse.site/ma/om303

293. Cards numbered 1 to 30 are put in a bag. A card is drawn at random. What is the probability that the drawn card is not a perfect square?

(a) $\frac{5}{6}$

(b) $\frac{1}{6}$

(c) $\frac{1}{12}$

(d) $\frac{1}{5}$

Sol : www.cbse.site/ma/om304

294. Two dice are thrown at the same time. What is the probability of getting same number on both dice?

(a) $\frac{1}{6}$

(b) $\frac{1}{12}$
(c) $\frac{1}{18}$
(d) $\frac{1}{36}$

Sol : www.cbse.site/ma/om305

295. Two different dice are thrown together. What is the probability that the number obtained is a doublet of odd numbers.
(a) $\frac{13}{18}$
(b) $\frac{5}{12}$
(c) $\frac{4}{9}$
(d) $\frac{1}{4}$

Sol : www.cbse.site/ma/om306

296. A bag contains 25 cards numbered from 1 to 25. A card is drawn at random from the bag. What is the probability that the number on the drawn card is a perfect square number?
(a) $\frac{2}{5}$
(b) $\frac{12}{25}$
(c) $\frac{3}{5}$
(d) $\frac{1}{5}$

Sol : www.cbse.site/ma/om307

297. A dice is rolled twice. What is the probability that 5 will not come up either time?
(a) $\frac{23}{36}$
(b) $\frac{25}{36}$
(c) $\frac{13}{36}$
(d) $\frac{11}{36}$

Sol : www.cbse.site/ma/om308

298. Two different dice are thrown together. What is the probability that the number obtained have a sum less than 7?
(a) $\frac{13}{18}$
(b) $\frac{5}{12}$
(c) $\frac{4}{9}$
(d) $\frac{13}{36}$

Sol : www.cbse.site/ma/om309

299. A box contains 20 cards from 1 to 20. A card is drawn at random from the box. What is the probability that the number on the drawn card is a prime number?
(a) $\frac{5}{20}$
(b) $\frac{3}{20}$
(c) $\frac{4}{20}$
(d) $\frac{8}{20}$

Sol : www.cbse.site/ma/om310

300. One card is drawn from a well shuffled deck of 52 cards. What is the probability of getting black king or a red queen?
(a) $\frac{1}{13}$
(b) $\frac{10}{13}$
(c) $\frac{13}{26}$
(d) $\frac{27}{52}$

Sol : www.cbse.site/ma/om311

301. A bag contains 15 white and some black balls. If the probability of drawing a black ball from the bag is thrice that of drawing a white ball, what is the number of blackballs in the bag?
(a) 40
(b) 45
(c) 50
(d) 55

Sol : www.cbse.site/ma/om312

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