ಬೆಂಗಳೂರು ಗ್ರಾಮಾಂತರ ಜಿಲ್ಲಾ ಪಂಚಾಯತ್

ಸಾರ್ವಜನಿಕ ಶಿಕ್ಷಣ ಇಲಾಖೆ

ಉಪನಿರ್ದೇಶಕರ ಕಛೇರಿ (ಆಡಳಿತ). ಬೆಂಗಳೂರು ಗ್ರಾಮಾಂತರ ಜಿಲ್ಲೆ

ಸ್ಫೂರ್ತಿ

ಬಹುಆಯ್ಕೆ ಮಾದರಿ ಪ್ರಶ್ನೆಗಳು

ಎಸ್.ಎಸ್.ಎಲ್.ಸಿ 2020-21

ಗಣಿತ

(ಆಂಗ್ಲ ಮಾಧ್ಯಮ)

Multiple choice questions

Arithmetic progressions

Points to remember

- Arithmetic progression is a sequence in which common difference is constant.
- General form of arithmetic progression is a, a+d, a+2d, a+3d,.....a+(n-1)d
- Common difference in an A.P $d = a_2 - a_1$
- nth term of A.P is $a_n = a+(n-1)d$
- Sum of first n terms of an A.P , $S_n = \frac{n}{2}[2a+(n-1)d]$ or $s_n = \frac{n}{2}(a + a_n)$
- Sum of first n natural numbers , $s_n = \frac{n}{2}(n+1)$
- Sum of first n even natural numbers $= n(n+1)$
- Sum of first n odd natural numbers = n^2

Multiple choice questions

1) The 4^{th} term of an Arithmetic progression 5 , 8 , 11 ,,,,,,,,,,,,, is

A) 15 B) 13 C) 14 D) 16

2) The common difference in an Arithmetic progression 8 , 14 , 20 ……. is

A) 8 B) 6 C) 5 D) -6

3) The preceeding term of 13 in an Arithmetic progression 13, 10, 7……. Is

A) 16 B) 15 C) 17 D) 10

4) The n^{th} term in an Arithmetic progression with first term 'a 'and the common difference 'd' is

A) an = an+1 B) an = a+(n-1)d C) an = a+(n+1)d D) an = a-1

5) In an Arithmetic progression $a_n = 5n+2$, then 1^{st} term is

A) 7 B) 6 C) 5 D) 8

6) In an Arithmetic progression $a_n = 3n+5$, then the 5^{th} term is

A) 30 B) 28 C) 20 D) 13

7) An Arithmetic progression among the following is

A) 10,7,4,1,.... B) 5,8,12,..... C) 0,3,6,10,..... D) 16,8,4,2,....

8) How many two digit numbers are divisible by 5

A) 17 B) 18 C) 19 D) 20

9) An Arithmetic progression with first term 2 and the common difference 3 is

A) 2,5,9,.... B) 2,5,8,... C) 3,5,7,..... D) 2,6,10,.....

10) In an A.P, $a_n = 2n-1$ then the product of first three term is

A) 10 B) 12 C) 15 D) 18

11) 10^{th} term of an Arithmetic progression 1, 4, 7, ……. is

A) 31 B) 27 C) 32 D) 28

12) The Sum of first 20 natural numbers is

A) 210 B) 200 C) 190 D) 205

13) First term in the given Arithmetic progression 5 , 8 , 11 ,,,,,,,,,,,,, is

A) 5 B) 8 C) 11 D) 2

14) An Arithmetic progression among the following is

A) -37,-35,-33,-31 B) 2 ,4 , 8 , 16 C) 4,10,16,26 D) -5,-10,+10,+5

15) The common difference in an Arithmetic progression 10, 14, 18……. is

A) 10 B) 4 C) 18 D) -4

16) The next term of an Arithmetic progression 13, 10, 7……. Is

A) 3 B) 7 C) 4 D) -4

17) In an A.P , $S_n = \frac{n}{2}(7n - 1)$, then the common difference is

A) 3 B) 5 C) 7 D) 9

18) In an Arithmetic progression $a_n = 3n+5$, then 8^{th} term is

A) 29 B) 19 C) 43 D) 26

19) In an Arithmetic progression $a_n = 6n-4$, then the first term is

A) 4 B) 2 C) -4 D) -2

20) In an Arithmetic progression $a_n = 2n+3$, then the common difference is

A) 5 B) 1 C) 3 D) 2

21) In an Arithmetic progression $a_n = 2n$ then the value of S_3 is

A) 12 B) 2 C) 14 D) 6

22) The fourth term in an Arithmetic progression if $S_4 = 38$ and $S_3 = 24$ is

A) 5 B) 14 C) 3 D) 8

23) The next four terms of an Arithmetic progression 6 , 9 , 12….are

A) 16 , 19 , 22 , 25 B) 15 , 18 , 24 , 30

C) 15 , 18 , 21 , 24 D) 15 , 17 , 19 , 21

24) S_{10} in an Arithmetic progression if the sum of first 3 terms is 9 and sum of next 3 terms is 27 is

A) 30 B) 38 C) 46 D) 36

25) The Sum of first nth terms of an Arithmetic progression with first term ‘a’ and the common difference ‘d’ is

A) $S_n = n[2a+(n-1)d]$ B) $S_n = \frac{n}{2}[a+(n-1)d]$

C) $S_n = \frac{n}{2}[2a+(n+1)d]$ D) $S_n = \frac{n}{2}[2a+(n-1)d]$

26) An Arithmetic progression with first term 3 and the common difference 4 is

A) 4,7,11,15 B) 3 , 7 , 11 ,15

C) 3 , 8 ,13 ,18 D) 3 , 6 , 9 ,12

27) The sum of first n positive integers is

A) $S_n = \frac{(n+2)n}{2}$ B) $S_n = \frac{n(n+1)}{2}$ C) $S_n = \frac{n(n-1)}{2}$ D) $S_n = \frac{n(n-2)}{2}$

28) The common difference in An Arithmetic progression $2\sqrt{3}$, $5\sqrt{3}$, $8\sqrt{3}$…….is

A) $3\sqrt{3}$ B) 3 C) $\sqrt{3}$ D) $\sqrt{6}$

29) The 10^{th} term of an Arithmetic progression 4, 7, 10……. is

A) 36 B) 31 C) 34 D) 40

30) Sum of first 10 odd natural numbers is

A) 120 B) 55 C) 110 D) 100

31) In A.P if a=5, d=3, , a_n =20 then find the value of 'n'

A) 5 B) 6 C) 3 D) 7

32) The meaning of a_{10} in Arithmetic progression is …

A) a+10d B) a+11d C) a+9d D) a-9d

33) If 2, x ,14 are in Arithmetic progression, then the value of ' x ' is

A) 28 B) 16 C) 7 D) 8

34) $\sqrt{7}$, $\sqrt{28}$, $\sqrt{63}$…… are in Arithmetic progression, then the next term is

A) $\sqrt{112}$ B) $\sqrt{84}$ C)$\sqrt{98}$ D) $\sqrt{122}$

35) The sum of first ' n ' even natural numbers is

A) n (n +1) B) n^2 C) $\frac{n}{2}$ D) n (n -1)

36) The sum of first ' 10 ' even natural numbers is

A) 100 B) 90 C) 80 D) 110

37) The sum of first ' n ' odd natural numbers is

A) 2n B) n C) n^2 D) n^3

38) a , b , c and d are in A.P, then c-b is equal to

A) (a –b) , B) (b –c) C) (d –c) D) (c-d)

ANSWERS:

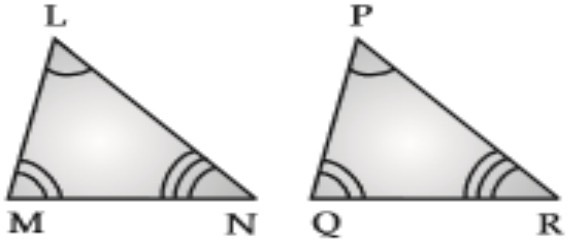
1	C	11	D	21	A	31	B
2	B	12	A	22	B	32	C
3	A	13	A	23	C	33	D
4	B	14	A	24	D	34	A
5	A	15	B	25	D	35	A
6	C	16	C	26	B	36	D
7	A	17	C	27	B	37	C
8	C	18	A	28	B	38	D
9	B	19	B	29	B		
10	C	20	D	30	D		

Triangles

Points to remember

- Two figures are similar if and only if they have same shape but not necessarily the same size.
- Two polygons of same number of sides are similar If
  1) All the corresponding angles are equal.
  2) All the corresponding sides are in the same ratio or in a proportion.
- Two triangles are said to be similar if there corresponding angles are equal or corresponding sides are proportional.
- Basic proportionality theorem (BPT) (Thales theorem): "If a straight line is drawn parallel to one side of a triangle, then it divides the other two sides proportionally."
- AA – Similarity criterion

  If two triangles if the corresponding angles are equal, then their corresponding sides will be in proportion and hence the two triangle are similar.



In ΔLMN ಮತ್ತು ΔPQR ಗಳಲ್ಲಿ,

(i) $\angle L = \angle P, \quad \angle M = \angle Q, \quad \angle N = \angle R$

(ii) $\frac{LM}{PQ} = \frac{MN}{QR} = \frac{LN}{PR}$

$\Rightarrow$ **ΔLMN ~ ΔPQR,**

- ❖ The areas of similar triangles are proportional to square of the corresponding sides.
- ❖ Pythagoras theorem: In a right angled triangle the square on the hypotenuse is equal to the sum of the squares on the other two sides.
- ❖ Baudhayana theorem: The diagonal of a rectangle. Produces both areas of which its length and breadth produce separately.
- ❖ Pythagorean triplets: The triplets of natural numbers are form a right angled triangle are called pythagorean triplets

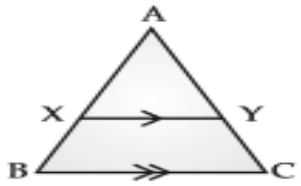
  Ex:- i) 3, 4, 5 ii) 6, 8, 10
- ❖ Converse of pythagoras theorem:- "If the square on the longest side of a triangle is equal to the sum of the squares on the other two sides then those sides contain a right angle".

Multiple choice questions

1) **In ΔABC , DE $\|$ AB. If CD=3cm , EC=4cm , BE=6cm , then DA is equal to**

(A) 7.5 cm (B) 3 cm (C) 4.5 cm (D) 6 cm

2) **In fig , if XY|| BC, then $\frac{AX}{XB}$ =**



(A) $\frac{AX}{AY}$ (B) $\frac{AX}{AB}$ (C) $\frac{AY}{YC}$ (D) $\frac{AC}{AY}$

3) **In a rectangle , length=8cm , breadth=6cm , then the length of its diagonal is equal to**

(A) 9 cm (B) 14 cm (C) 10 cm (D) 12 cm

4) **$\Delta ABC \sim \Delta DEF$ and $\frac{BC}{EF} = \frac{3}{5}$ then , $\frac{\text{Area of}\Delta ABC}{Area\ of\ \Delta DEF} =$**

(A) $\frac{3}{5}$ (B) $\frac{9}{25}$ (C) $\frac{27}{125}$ (D) $\frac{6}{10}$

5) **$\Delta ABC \sim \Delta PQR$ and $\frac{\text{Area of } \Delta ABC}{Area\ of\ \Delta PQR} = \frac{25}{81}$, then BC:PQ is**

(A) $9:5$ (B) $5:3$ (C) $25:81$ (D) $5:9$

6) **The length of the altitude of an equilateral triangle of side 10cm is**

(A) $5\sqrt{3}$ cm (B) $10\sqrt{3}cm$ (C) $\sqrt{3}$ cm (D) 75cm

7) **The ratio of areas of two similar triangles when ratio of two of its corresponding sides is 4:9 is**

(A) 16:81 (B) 4 : 9 (C) 2 : 3 (D) 8:18

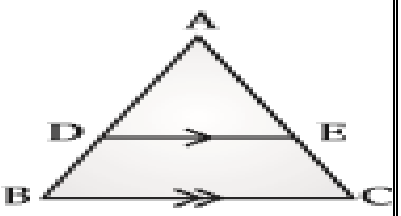
8) **In triangle PQR , $\angle PQR = 90^0$. PQ=12cm & QR=5cm , the length of PR=**

(A) 17 cm (B) 14 cm (C) 10 cm (D) 13 cm

9) **Pythagorean triplet among these**

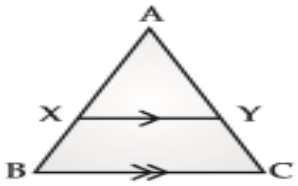
(A) 4, 5 , 6 (B) 2, 3 , 5 (C) 8, 10, 6 (D) 9, 10, 12

10) **In fig, D and E are the midpoints of AB and AC Respectively. If DE=4 cm then the value BC is**



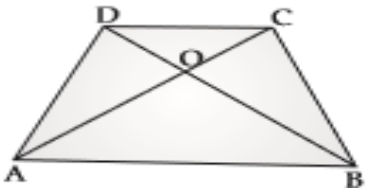
(A) 4 cm (B) 6 cm (C) 8 cm (D) 12 cm

11) **In fig , if XY|| BC, then the value of $\frac{AX}{AB}$ =**



(A) $\frac{AX}{AY}$ (B) $\frac{AX}{XB}$ (C) $\frac{AY}{AC}$ (D) $\frac{AC}{AY}$

12) **In trapezium ABCD , AB||CD and diagonals intersect at O then the value of $\frac{OD}{OC}$ =**

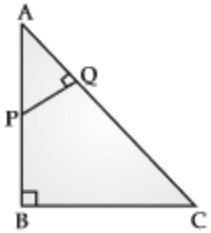


(A) $\frac{OB}{OA}$ (B) $\frac{AB}{CD}$ (C) $\frac{OC}{OD}$ (D) $\frac{AC}{BD}$

13) **Sides of a triangle are of length 2 cm, 3 cm and 4 cm respectively. the set of numbers which are similar to the above triangle is**

(A) 4, 5, 6 (B) 5, 6, 7 (C) 12, 13, 14 (D) 6, 9, 12

14) **In fig $\angle ABC = \angle AQP = 90°$, then $\frac{AQ}{AB}$**



(A) $\frac{BC}{PQ}$ **(B)** $\frac{AC}{PQ}$ **(C)** $\frac{QP}{BC}$ **(D)** $\frac{AP}{AB}$

15) **Corresponding sides in equiangular triangle are**

(A) ಸಮನಾಗಿರುತ್ತವೆ **(B) ಸಮಾಂತರದಲ್ಲಿರುತ್ತವೆ**

(C) ಸಮಾನುಪಾತದಲ್ಲಿರುತ್ತವೆ **(D) ಅಸಮನಾಗಿರುತ್ತವೆ**

16) Sides of two similar triangles are in the ratio 2:3. Areas of these triangles are in the ratio

(A) 9 : 4 **(B) 4 : 9** **(C) 2 : 3** **(D) 3 : 2**

17) Areas of two similar triangles are in the ratio 25 : 49. Sides of these triangles are in the ratio

(A) 4 : 6 **(B) 5 : 7** **(C) 6 : 7** **(D) 7 : 8**

18) **In triangle PQR , $\angle PQR = 90^0$. then the correct relation is**

(A) $PR^2 = PQ^2 - QR^2$ **(B)** $PQ^2 = QR^2 - PR^2$

(C) $PR^2 = PQ^2 + QR^2$ **(D)** $QR^2 = PQ^2 - PR^2$

19) **Pythagorean triplet among these**

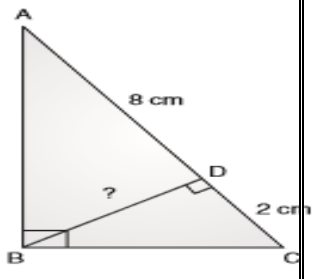
(A) 3, 4, 5 **(B) 1, 2, 3** **(C) 2, 3, 4** **(D) 9, 10, 14**

20) **Among these which one forms the sides a right angle triangle**

(A) 3, 6, 9 **(B) 15, 8, 17** **(C) 5, 12, 17** **(D) 8, 5, 17**

21) **In the fig, $\angle ABC = 90^0$, $\angle ADCB = 90^0$, AD = 8 cm, and CD = 2 cm,then find lenth of BD**

(A) 4 cm **(B) 8 cm** **(C) 16 cm** **(D) 10 cm**



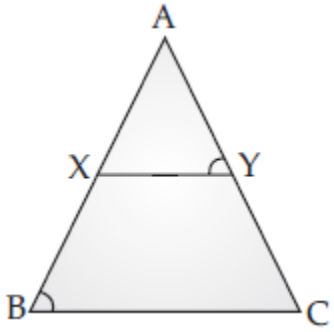
22. In the given figure, $\angle ABC \sim \angle AYX$, then the ratio of the corresponding sides is :

A) $\frac{AX}{AC} = \frac{AB}{AY} = \frac{CB}{XY}$

B) $\frac{AB}{AY} = \frac{BC}{XY} = \frac{AX}{AC}$

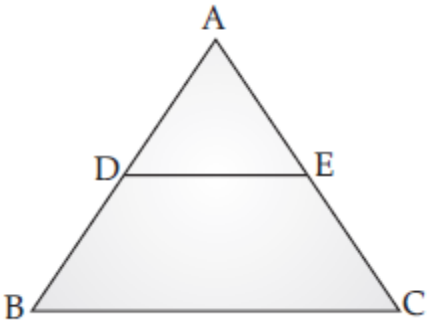
C) $\frac{AB}{AX} = \frac{AC}{AY} = \frac{BC}{XY}$

D) $\frac{AX}{AC} = \frac{AY}{AB} = \frac{XY}{CB}$



23. **In the figure, *DE* || *BC*, *AD* : *AB* = 1 : 2, *BC* = 6 cm, then *DE* is**

(A) 1 cm **(B) 2 cm** **(C) 3 cm** **(D) 4 cm**



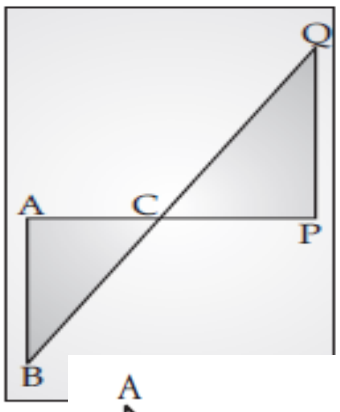
24. In the given figure $\Delta ABC \sim \Delta PQC$. The ratio of their corresponding sides is

A) $\frac{AB}{PQ} = \frac{BC}{PC} = \frac{AC}{QC}$

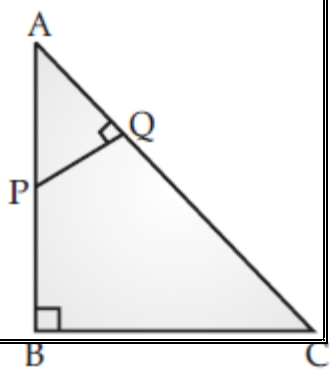
B) $\frac{AB}{PC} = \frac{BC}{PQ} = \frac{AC}{QC}$

C) $\frac{BC}{PQ} = \frac{AB}{QC} = \frac{AC}{PC}$

D) $\frac{AB}{PQ} = \frac{BC}{QC} = \frac{AC}{PC}$



25. In the figure, $\angle ABC = \angle AQP = 90°$, then $\frac{AQ}{AB}$



A) $\frac{BC}{PQ}$ (b) $\frac{AC}{PQ}$ (c) $\frac{QP}{BC}$ (d) $\frac{AP}{AB}$

26. Sides of a triangle are of length 2 cm, 3 cm and 4 cm respectively. Which of the sets of numbers are the sides of a triangle, similar to the above triangle ?

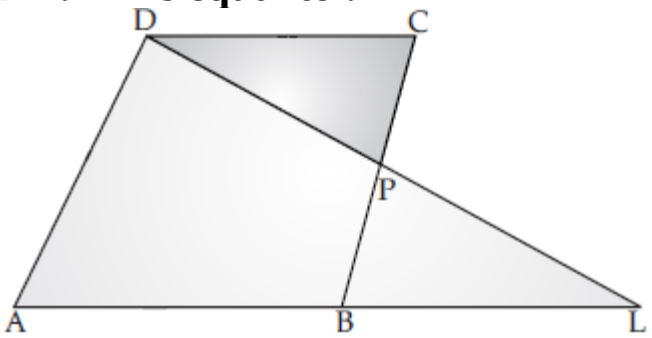
(A) 4, 5, 6 (B) 5, 6, 7 (C) 12, 13, 14 (D) 6, 9, 12

27. Select the set of numbers from the following which can form similar triangles

(A) 9, 12, 18 and 3, 4, 6 **(B)** 3, 4, 6 and 9, 10, 12

(C) 8, 6, 12 and 2, 6, 3 **(D)** 3, 4, 5 and 2, 4, 10

28. In parallelogram ABCD, P is a point on BC. In ΔDCP and ΔBLP, DP : PL is equal to :



(A) DC : BL (B) DC : BP (C) PC : BL (D) PC : PL

29. ΔABC has sides of length 5 cm, 6 cm and 7 cm. The perimeter of ΔDEF is 360 cm. If $\Delta ABC \sim \Delta DEF$ then the ratio of the perimeters of ΔABC and ΔDEF is :

(A) 1 : 2 (B) 2 : 1 (C) 1 : 20 (D) 20 : 1

30. $\Delta ABC \sim \Delta DEF$, $\angle A = \angle D$ and $\angle B = \angle E$, then $\frac{\text{Area of triangle ABC}}{\text{Area of triangle DEF}}$ is equal to :

(A) $\frac{AC^2}{DF^2}$ **(B)** $\frac{AB^2}{DF^2}$ **(C)** $\frac{AC^2}{EF^2}$ **(D)** $\frac{BC^2}{DE^2}$

31. $\Delta ABC \sim \Delta DEF$, the area of ΔABC is 45 cm^2 and the area of ΔDEF is 20 cm^2 one side of ΔABC is 3·6 cm, then the length of corresponding side of ΔDEF is:

(A) 3·4 cm **(B)** 2·4 cm **(C)** 1·4 cm **(D)** 4·4 cm

32. If the perimeters of two similar triangles are in the ratio of 4 : 1, then the ratio between their areas will be :

(A) 16 : 1 **(B)** 4 : 1 **(C)** 2 : 1 **(D)** 2 :1

33. Which of the following is a correct statement ?

(A) All the rectangles are similar
(B) All the right angled triangles are similar
(C) All the rhombus are similar
(D) All the equilateral triangles are similar

34. The area of ΔABC = 144 sq. cm and area of ΔPQR = 25 sq. cm. Altitude of ΔABC = 6 cm. If $\Delta ABC \sim \Delta PQR$, then the corresponding altitude of ΔPQR is

(A) 2·5 cm **(B)** 5 cm **(C)** 12 cm **(D)** 6 cm

35. Two similar triangles have areas 120 sq. cm and 480sq. cm respectively. Then the ratio of any pair of corresponding sides is :

(A) 1 : 4 **(B)** 1 : 2 **(C)** 4 : 1 **(D)** 2 : 3

36. In Δ ABC, D, E and F are mid points of AB, BC and CA respectively. If area of Δ ABC = 60 sq. cm, then area of ΔDEF is :

(A) 15 sq. cm **(B)** 30 sq. cm

(C) 45 sq. cm **(D)** 60 sq. cm

37. **In $\triangle PQR$, $\angle PQR = 90°$. The correct relation with respect to**

(A) $PR^2 = PQ^2 - QR^2$ **(B)** $PQ^2 = QR^2 - PR^2$

(C) $PR^2 = PQ^2 + QR^2$ **(D)** $QR^2 = PQ^2 - PR^2$

38. "If the square of one side of a triangle is equal to the sum of the squares on the other two sides, then those two sides contain a right angle." This statement refers

(A) Pythagoras theorem **(B)** Thales theorem

(C) Converse of Thales theorem

(D) Converse of Pythagoras theorem.

39. The length of a diagonal of a square of side 5 cm is :

(A) $5\sqrt{2}$ **cm** **(B)** $2\sqrt{5}$ **cm** **(C) 10 cm** **(D)** $10\sqrt{2}$ **cm**

40. **In a rhombus ABCD, diagonals intersect at O. The sum of $AC^2 + BD^2$ are :**

(A) $4AB^2$ **(B)** $4AC^2$ **(C)** $4BD^2$ **(D)** $4AO^2$

41. A man goes 15 m due west and then 8 m due north. Calculate the distance from the starting point.

(A) 17m **(B) 15m** **(C) 12m** **(D) 23m**

42. A ladder 17 m long reaches a window of a building 15 m above the ground. The distance of the foot of the ladder from the building is

(A) 32m **(B) 2m** **(C) 8m** **(D) 13m**

ANSWERS:

1	C	11	C	21	A	31	B	41	A
2	C	12	A	22	D	32	A	42	C
3	C	13	D	23	C	33	D		
4	B	14	C	24	D	34	A		
5	D	15	C	25	C	35	B		
6	A	16	B	26	D	36	A		
7	A	17	B	27	A	37	C		
8	D	18	C	28	A	38	D		
9	C	19	A	29	C	39	A		
10	C	20	B	30	A	40	A		

Pair of linear equations in two variables

Points to remember

- Pair of linerar equations (simultaneous) : Two linear equations in the same two variables are called a pair of linear equations in two variables.
- General form of an pair of linear equations. .

$$a_1x + b_1y + c_1 = 0, \quad a_2x + b_2y + c_2 = 0$$

Where a_1, a_2, b_1, b_2, c_1, c_2 are real numbers

- Conditions for solvability (or consistency):

Condition	Solution	Graphical representatio	Consistency / Inconsistency
$\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$	Unique solution	**Intersecting lines**	**Consistent pair**
$\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$	No solution	**Parallel lines**	**Inconsistent pair**
$\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$	Infinite solutions	**Coincident lines**	**Consistent pair.**

Multiple choice questions

1) **The ratio of coefficients of linear equations $a_1x+b_1y+c_1=0$ and $a_2x+b_2y+c_2=0$ which have unique solution is**

A) $\frac{a_1}{a_2} = \frac{b_1}{b_2}$ **B)** $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ **C)** $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ **D)** $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

2) **For what value of 'k' the given pair of linear equations are parallel :**

$Kx + 3y = 5$; $4x + 6y = 13$

A) 4 B) 8 C) 3 D) 2 .

3) **For what value of 'k' the given pair of linear equations have infinitely many solutions : $2x + 4y = 3$, $6x + Ky = 9$**

A) 12 B) 8 C) 10 D) 4

4) **The ratio of coefficients of linear equations $a_1x+b_1y+c_1=0$ and $a_2x+b_2y+c_2=0$ which have infinite solution is**

A) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2} = \frac{c_1}{c_2}$ **B)** $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ **C)** $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ **D)** $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

5) **A pair of linear equations among the following which has infinitely many solutions is**

A) 2x - 3y+6 = 0, 2x+3y+6 = 0 **B) 3x - 4y - 6 = 0, 3x - 4y + 6 = 0**

C) x - y +10 = 0, x - y + 10 = 0 **D) 5x -10y + 20=0, 5x-20y+30=0**

6) **The inconsistent pair of equations among the following**

A) x - y + 3 = 0 , x-y+6=0 **B) 2x- y+20=0, x- 2y+10=0**

C) 3x - 4 y+12 = 0, x-y+10 =0 **D) 5x-10y+20= 0, x-2y+4=0**

7) **The linear equations 5x+10y=12 and 15x+30y=10 has**

A)unique solution B)infinitely many solutions

C) no solution D)have two solutions

8) **The linear equations 2x-3y=7 and 3x+2y=5 are**

A) Consistent pair B) Dependent pair

C) Inconsistent pair D) Straight pair

9) **The linear equations 4x+3y=10 and 8x+6y=20 have**

A)unique solution B)infinitely many solutions

C)no solution D)have two solutions

10) **The value of x and y for two equations x+y=5 and 2x-y=4 is**

A) (2 , 3) B) (3 , 2) C) (1 , 4) D) (4 , 1)

11) **For what value of 'k' the given pair of linear equations are parallel : 2x+3y=5 , 4x+ky=8**

A) 6 B) 3 C) 4 D) 2

12) **For what value of 'k' the given pair of linear equations are coincident lines : 2x+ky=10 , x+4y=5**

A) 2. B) 4. C) 6. D) 8.

13) **The lines of the equations 2x+3y=5 , 4x+y=10 are**

A)intersecting lines B) parallel

C)coincident D) inconsistent

14) **For what value of 'k' the given pair of linear equations have infinitely many solutions : kx-4y=3 , 6x-12y=9**

A) 1 B) 2 C) 3 D) 4

15) **Another equation among the following to match exactly with 2x+3y=9 and get intersecting lines in its graphical representation is**

A) 2x – 3y = 9. B) 4x + 6y = 3. C) 6x +9y = 10. D) 2x +3y = 9.

16) **The graph of the equation when the ratio $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ is**

A)coincident lines B) intersecting lines

C)parallel lines D) straight lines

ANSWERS:

1	C	7	C	13	C
2	D	8	A	14	B
3	A	9	C	15	A
4	B	10	B	16	B
5	C	11	D		
6	A	12	D		

Circles

Points to remember

- A straight line which intersects a circle at two distinct points is called secant.
- A straight line which intersects a circle at only one point is called a tangent.
- The point where a tangent touches the circles is called the point of contact.
- In any circle, the radius drawn at the point of contact is perpendicular to the tangent.
- Only one tangent can be drawn to a circle at any point on it.
- Tangents drawn at the ends of a diameter are parallel to each other.
- Length of tangents from an external point to a circle are equal.

Multiple choice questions

1) The line segment joining two distinct points on a circle is

   A) Chord B)Secant C) Tangent D) Radius

2) A straight line that intersects at only one point on the circle is

   A)Tangent B)Secant C)Radius D)arc of a circle.

3) The maximum number of parallel tangents that can be drawn to a circle is

   A)1 B)2 C)3 D)Infinitely many

4) The angle subtended between tangent and radius of a circle is

   A) 30° B) 60° C) 90° D) 180°

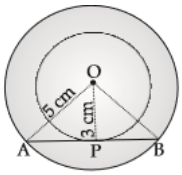
5) The maximum number of tangents that can be drawn to a circle from an external point is

   A)1 B)2 C) 3 D) 4

6) The number of tangents to a circle passing through a point lying on the circle is

A) 1 B) 2 C) 3 D)Infinitely many

7) Two concentric circles are of radii 5cm & 3cm with center 'O' and AB is the chord of larger circle which touches the smaller circle at P then the length of the chord AB =



A) 24cm B) 12cm C) 18cm D) 8 cm

8) The length of a tangent drawn to a circle of radius 6cm from an external point which is 10cm away from the centre is

A) 8cm B) 16cm C) 10cm D) 5cm

9) If the angle between two tangents of a circle with is 70◦ then angle between their radii is

A) 110◦ B) 70◦ C) 60◦ D) 100◦

10) If the angle between two radii of a circle is 90◦ , the angle between tangents drawn at the ends of the radii is

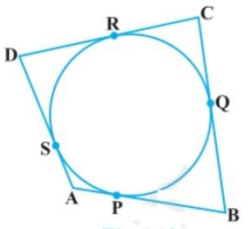
A) 0◦ B) 180◦ C) 60◦ D) 90◦

11) The tangents drawn at the ends of a diameter of a circle are

A) parallel to each other B)Perpedicular to each other

C)intersects to each other D) Coincides to each other

12) A quadrilateral ABCD is drawn to circumscribe a circle. AB+CD=

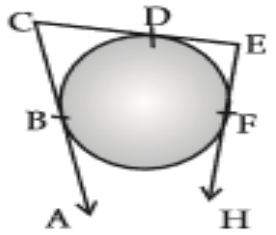


A) AC+CD B) AD+BC C) AB+BC D) AB+AD

13) PQ is a tangent to a circle with center 'O' touches the circle at point P then ∠OPQ =

A) 30° B) 60° C) 90° D) 180°

14) In the figure BC, CE and EF are the tangents drawn to a circle. If BC = 5 cm, EF = 3cm, then the length of CE =

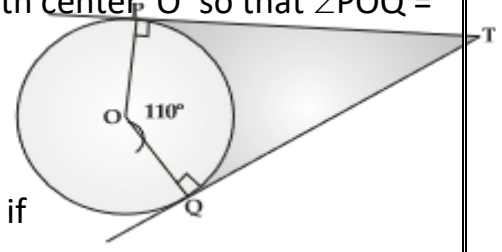


A) 3cm b) 5cm C) 8cm D) 2 cm

15) "P" Is the external point at a distance of 5cm from the center 'O' of the circle with radius OQ = 3cm and PQ is the tangent touches the circle at Q then the length of PQ =

A) 4cm B) 7cm C) 8cm D) 2cm

16) If TP and TQ are the two tangents to a circle with center 'O' so that ∠POQ = 110° then ∠PTQ =



A) 110° B) 70° C) 60° D) 100°

17) PQ & PR are tangents to a circle with center 'O' if ∠QPR = 50° then ∠QOR =

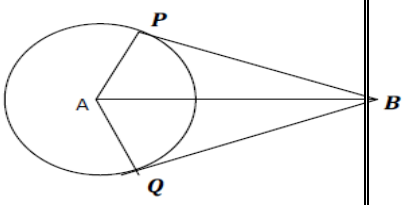
A) 130° B) 50° C) 65° D) 90°

18) The tangents drawn at the ends of a diameter of a circle are

A) parallel to each other B)Perpedicular to each other

C)intersects to each other D) Coincides to each other

19) In the Figure PB is the tangent to a circle with center 'A' if ∠ABP = 40° then ∠PAB =



A) 90° B) 50° C) 40° D) 60°

20) A circle with radius 3cm is circumscribe in a square ABCD. Then, the perimeter of a square is A) 24cm B) 6cm C) 12cm D) 36 cm

ANSWERS:

1	A	7	D	13	C	19	B
2	A	8	A	14	C	20	C
3	B	9	A	15	A		
4	C	10	D	16	B		
5	B	11	B	17	A		
6	A	12	B	18	A		

Constructions

1) A line segment of length 9cm is divided in the ratio 1:1. The length of each part is
   A) 9cm B) 5cm C) 4.5cm D) 18cm
2) Divide a line segment of length 10cm in the ratio 2:3 . The lengths of their partsrespectively are
   A) 3cm ಮತ್ತು 7cm B) 4cm ಮತ್ತು 6cm
   C) 4.6cm ಮತ್ತು 5.4cm D) 4.2cm ಮತ್ತು 5.8cm
3) Construct a triangle of with sides 6cm , 9cm and 7.5cm respectively. Then construct another triangle similar to the given triangle such that each of its sides are $\frac{2}{3}$ of the corresponding sides of given triangle . The lengths of the new triangle respectively are
   A) 4cm , 6cm , 8cm B) 4cm , 6cm , 10cm
   C) 4cm , 7cm , 6cm D) 4cm , 6cm , 5cm

ASWERS:

1	2	3
C	B	D

Coordinate geometry

Points to remember

1. **Distance between P(x_1, y_1) & Q(x_2 ,y_2) is given by**

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

2. **Distance between origion and a point P(x, y) is given by**

$$d = \sqrt{x^2 + y^2}$$

3. **The coordinates of the point (x , y) which divides the line segment joining the points P(x_1, y_1) & Q(x_2 ,y_2) in the ratio m:n are**

$$(x, y) = \left[\frac{m_1x_2+m_2x_1}{m_1+m_2} , \frac{m_1y_2+m_2y_1}{m_1+m_2}\right]$$

4. **Mid point formula: The coordinates of the mid point (x , y) of the line segment joining the points P(x_1, y_1) & Q(x_2 ,y_2) is**

$$(x, y) = \left[\frac{x_1+x_2}{2} , \frac{y_1+y_2}{2}\right]$$

5. **Area of a triangle with vertices (x_1, y_1), (x_2, y_2) & (x_3, y_3) is**

$$\Delta = \frac{1}{2}\{x_1 (y_2 - y_3)+ x_2 (y_3 - y_1)+ x_3 (y_1 - y_2)\}$$

Multiple questions

1) The distance between (X_1, Y_1) & (X_2, Y_2) is

A) $\sqrt{(X_2 - X_1)^2 + (Y_2 - Y_1)^2}$ B) $(X_2 - X_1)^2 + (Y_2 - Y_1)^2$

C) $\sqrt{(X_2 - X_1) + (Y_2 - Y_1)}$ D) $(X_2 - X_1) + (Y_2 - Y_1)$

2) The distance of a point (X,Y) from the origin is

A) $X^2 + Y^2$ B) $\sqrt{X^2 + Y^2}$ C) $X^2 - Y^2$ D) $\sqrt{X^2 - Y^2}$

3) The mid point of the line segment joining the points (X_1, Y_1) & (X_2, Y_2) is

A) $\left(\frac{X1+Y1}{2}, \frac{X2+Y2}{2}\right)$ B) $\left(\frac{X1-Y1}{2}, \frac{X2-Y2}{2}\right)$

C) $\left(\frac{x2+x1}{2}, \frac{y2+y1}{2}\right)$ D) $\left(\frac{x2-x1}{2}, \frac{y2-y1}{2}\right)$

4) The distance between the coordinates (3,4) from its origin is

A) 6 units, B) 5 units C) 10 units D) 8 units

5) The distance between the coordinates (8,3) and (5,7) is

A) 5 units B) 11 units C) $2\sqrt{2}$ units D) 4 units

6) The mid point of the line joining the points (11, -4) & (5, 6) is

A) (5, 3) B) (-3, 7) C) (8,1) D) (16,2)

7) The coordinates of the end points of a diameter of a circle are (6,2) & (6,4). Then the coordinates of the center of the circle are

A) (4,5) B) (6,3) C) (5,4) D) (10, 8)

8) The value of x when the distance between the points (7,x) & (4,0) is 5 units is

A) ±7 B) ±4 C) 0 D) ±3

9) The coordinates of the point which divides the join of (3,2) & (0,5) in the ratio 2:1 are A) (1, 4) B) (4,1) C) (3, 7) D) (7,3)

10) The area of the triangle formed by joining the collinear points (X_1, Y_1) (X_2, Y_2) & (X_3, Y_3) is

A) 1 sq.units B) 0 sq.units C) 100 sq.units D) -1 sq.units

11) The value of P when the points (-5,1) , (1, P) and (4,-2) are collinear is

A) 4 B) 5 C) - 1 D) $3\sqrt{3}$

12) The ratio when the line 3x+y - 9=0 divides the line segment joining the points (1,3) and (2,7) is

A) 3:4 B) 3:2 C) 2:3 D) 4:3

13) The value of x when the distance between the points (x,-1) and (3,2) is 5 units , is

A) -7 or -1 B) -7 or 1 C) 7 or 1 D) 7 or -1

14) The relation between a and b when the points (1,2) , (0,0) and (a , b) are collinear is A) 2a=b B) a=-b C) a=2b D) a=b

15) The area of a triangle with vertices (1,-1) (-4,6) & (-3,-5) is

A) 24 sq.units B) 40 sq.units C) 48 sq.units D) 32 sq.units

16) The distance of the point P(2, 7) from the x – axis is _____

A) 2 units B) 7 units C) 9 units D) 11 units

17) The distance of the point Q(6, 2) from the Y – axis is _____

A) 2 units B) 4 units C) 6 units D) 8 units

18) Co-ordinates of origin are.

A) (1, 1) B) (1, 0) C) (0, 1) D) (0, 0)

19) The formula to find out the area of the triangle whose vertices are

A (x_1, y_1), B(x_2, y_2) and C (x_3, y_3) is _____

A) . $\frac{1}{2}[x_1 (y_2 + y_3) + x_2 (y_3 + y_1) + x_3 (y_1 + y_2)$

B) . $\frac{1}{2}[x_1 (y_2 - y_3) + x_2 (y_3 - y_1) + x_3 (y_1 - y_2)]$

C) . $\frac{1}{2}[x_1 (y_2 - y_3) - x_2 (y_3 - y_1) - x_3 (y_1 - y_2)]$

D). $\frac{1}{2}[x_1 (y_2 + y_3) - x_2 (y_3 + y_1) - x_3 (y_1 + y_2)]$

20) The coordinates of the points which divides the line segment joining the points (x_1, y_1) and (x_2, y_2) internally in the ratio $m_1 : m_2$ is

A) . $\left[\frac{m_1x_2+m_2x_1}{m_1+m_2} , \frac{m_1y_2+m_2y_1}{m_1+m_2}\right]$ B). $\left[\frac{m_1x_2-m_2x_1}{m_1+m_2} , \frac{m_1y_2-m_2y_1}{m_1+m_2}\right]$

C) . $\left[\frac{m_1x_2+m_2x_1}{m_1-m_2} , \frac{m_1y_2+m_2y_1}{m_1-m_2}\right]$ D). $\left[\frac{m_1x_2-m_2x_1}{m_1-m_2} , \frac{m_1y_2-m_2y_1}{m_1-m_2}\right]$

21) The area of the triangle whose vertices are A **(3, 3),** B**(3 , 5)** and C **(2 , 4)** is

A) 0 units B) 1 units C) 2 units D) 3 units

22) The perpendicular distance of point A (6, 9) from the x–axis and y-axis is

A) 6 units, 9units B) 9 units , 6units

C) 6 units ,15 units D) 15 units, 9units

23) The coordinates of the point on the x- axis will be in the form _____

A) (0, y) B) (x, 0) C) (0, 0) D) (x, y)

24) The coordinates of the point on the y- axis will be in the form _____

A) (0, y) B) (x, 0) C) (0, 0) D) (x, y)

25) Y- coordinate on x-axis is _____

A) 0 B) 1 C) 2 D) 3

26) X-coordinate on y-axis is _____

A) 3 B) 2 C) 1 D) 0

27) The point among the following which lie on x-axis is

A) (2, 0) B) (0, 2) C) (2, 3) D) (0, -2)

28) The point among the following which lie on y-axis is

A) (3, 0) B) (0, -4) C) (-2, 0) D) (4, 6)

ANSWERS:

1	A	7	B	13	D	19	B	25	A
2	B	8	B	14	A	20	A	26	D
3	C	9	A	15	A	21	B	27	A
4	B	10	B	16	B	22	B	28	B
5	A	11	C	17	C	23	B		
6	C	12	C	18	D	24	A		

Quadratic equations

Points to remember

1. **Standard form of a quadratic equation is** $ax^2 + bx + c=0 , a \neq 0$
2. **Quadratic formula to find roots of $ax^2+bx+c = 0$ are**

$$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$$

3. **Nature of roots of a quadratic equation**
   - i. **The discriminant to find nature of roots of a quadratic equation $ax^2+bx+c = 0$ is given by** $\Delta = b^2 - 4ac$
   - ii. **If $\Delta = b^2 - 4ac=0$ then roots are real and equal.**
   - iii. **If $\Delta = b^2 - 4ac > 0$ (+ve) then roots are real and distinct.**
   - iv. **If $\Delta = b^2 - 4ac < 0$ (-ve) No real roots.**

1. Which of the following is not a quadratic equation

   A) $x^2+3x-5=0$ (B)$x^2+x^3+2=0$ (C)$3+x+x^2=0$ (D) $x^2 - 9 = 0$

2. The quadratic equation has degree

   (A) 0 (B) 1 (C) 2 (D) 3

3. The standard form of a quadratic equation is

   A) $ax^2 + bx + c = 0$ B) $ax + b = c$ C) $ax^3 + bx^2 + c = 0$ D) $ax - b = 0$

4. Pure quadratic equation among the following is

   A) $x^2 + 2x + 2 = 0$ B) $x^2 + 5x + 6 = 0$

   C) $x^2 + 9 = x$ D) $x^2 - 9 = 0$

5. Sridhara's quadratic formula for the quadratic equation $ax^2 + bx + c = 0$ is

A) $-b \pm \sqrt{b^2 - 4ac}$ B) $\frac{-b}{2a} \pm \sqrt{b^2 - 4ac}$

C) $\frac{-b \pm \sqrt{b^2 - 2ac}}{4a}$ D) $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

6. Formula to find the discriminant of the quadratic equation $ax^2 + bx + c = 0$ is

A) $b^2 - 4ac$ B) $\frac{b}{2a}$ C) $\frac{-b}{2a}$ D) $\frac{-b}{4ac}$

7. The maximum number of roots of a quadratic equation is

A) one B) two C) three (D) depends on the given equation

8. Sum of a number and its reciprocal is 17/4, the number is

A) 4 B) 3 C) 5 D) 2

9. The values of X in given Quadratic equation $X^2+1=101$ are

A) ±1 B) ±10 C) ±11 D) $\pm\sqrt{10}$

10. The roots of the Quadratic equation $x^2=49$ are

A) 7 and -7 B) 24 and 5 C) 8 and -8 D) 7 and 0

11. If the roots of the equation $ax^2 + bx + c = 0$ are equal, then the value of C is

A) $b^2 - 4a$ B) $b^2 \times 4a$ C) $\frac{b^2}{4a}$ D) $\frac{4a}{b^2}$

12. The discriminant of the given quadratic equation $2x^2 - 4x + 3 = 0$ is

A)-8 B)8 C)0 D)1

13. If the roots of the quadratic equation $x^2 + mx + 4=0$ are equal, then the value of m is

A) 2 B) 4 C) 6 D) 5

14. "The product of two consecutive positive integers is 30" this statement can be expressed as

A) x(x+2) = 30 B) x(x-2) = 30 C) (x-3)x = 30 D) x(x+1)=30

15. Which of the following is an example for quadratic equation

A) $x(x+3)+5 = x^2$ B)$x(x-3)=5$ C) $2x^2+2x = 2(x^2-5)$ D)$(x+1)x=x(x-3)$

16. The nature of roots of the equation $x^2 + 4x + 4 = 0$ is

A) Real and Equal B) Real and distinct C) No real D) Different roots

17. " The sum of squares of two consecutive odd positive integers is 34" this can expressed as

A)$x^2 + (x+1)^2 = 34$ B) $x^2 + (x+3)^2 = 34$

C) $(x+1)^2 + (x+2)^2 = 34$ D) $x^2 + (x+2)^2 = 34$

18. If -5 is a root of the quadratic equation $2x^2 + px - 15 = 0$, then the value of p is

(A) 3 (B) 5 (C) 7 (D) 1

19. The sum of the reciprocals of Rehman's ages 3 years ago and 5 years from now is 1/3. The present age of Rehman is:

(A)7 years (B)10 years (C)5 years (D)6 years

20. What number should be added to x^2+6x to make it a perfect square?

A) 36 (B) 18 (C) 9 (D) 72

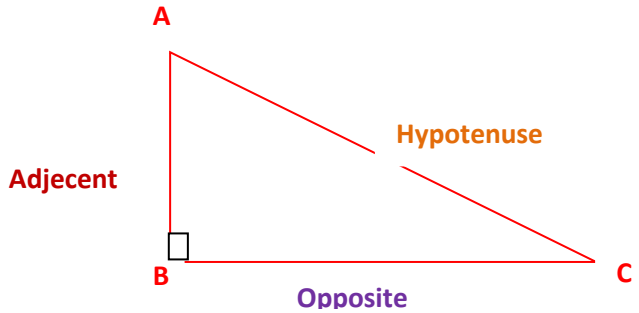
ASWERS:

1	B	6	A	11	C	16	A
2	C	7	B	12	A	17	D
3	A	8	A	13	B	18	C
4	D	9	B	14	D	19	A
5	D	10	A	15	B	20	A

UNIT : TRIGONOMETRY

Points to remember

TRIGONOMETRIC RATIOS :



SinA	*CosA*	*TanA*	*CosecA*	*SecA*	*CotA*
$\frac{Opposite}{Hypotenuse}$	$\frac{Adjecent}{Hypotenuse}$	$\frac{Opposite}{Adjecent}$	$\frac{Hypotenuse}{Opposite}$	$\frac{Hypotenuse}{Adjecent}$	$\frac{Adjecent}{Opposite}$

TRIGONOMETRICAL RATIOS TABLE FOR STANDARD ANGLES

$\angle A$	0^0	30^0	45^0	60^0	90^0
SinA	0	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1
CosA	1	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0
TanA	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	N.D
CosecA	N.D	2	$\sqrt{2}$	$\frac{2}{\sqrt{3}}$	1
SecA	1	$\frac{2}{\sqrt{3}}$	$\sqrt{2}$	2	N.D
CotA	N.D	$\sqrt{3}$	1	$\frac{1}{\sqrt{3}}$	0

TRIGONOMETRIC RATIOS OF COMPLEMENTARY ANGLES

SinA	*CosA*	*TanA*	*CosecA*	*SecA*	*CotA*
Cos(90-A)	Sin(90-A)	Cot(90-A)	Sec(90-A)	Cosec(90-A)	Tan(90-A)

TRIGONOMETRIC IDENTITY

- $Sin^2A + Cos^2A = 1$
- $Tan^2A + 1 = Sec^2A$
- $1 + Cot^2A = Cosec^2A$

INVERSE OF TRIGONOMETRIC VALUES

$\frac{1}{SinA}$	CoSecA
$\frac{1}{CosA}$	SecA
$\frac{1}{TanA}$	CotA
$\frac{1}{CosecA}$	SinA
$\frac{1}{SecA}$	CosA
$\frac{1}{CotA}$	TanA

SOME IMPORTANT MULTIPLE CHOICE QUESTIONS

1. The value of $\tan 45^0$ is _____

   A) $\sqrt{3}$ B) 0 C) 1 D) $\frac{1}{\sqrt{3}}$

2. If $2\sin 2\theta = \sqrt{3}$ then the value of 'θ' is _____

   A) 90^0 B) 60^0 C) 30^0 D) 45^0

3. $\sin(90-\theta)$ is equal to _____

   A) $\cos\theta$ B) $\tan\theta$ C) $\sec\theta$ D) $\cot\theta$

4. $\tan\theta - \cot(90-\theta)$ is equal to _____

   A) 0 B) 1 C) 2 D) 3

5. If $\sin\theta = \frac{x}{y}$ then the value of $\cos\theta$ is _____

   A) $\frac{y}{\sqrt{y^2-x^2}}$ B) $\frac{y}{x}$ C) $\frac{x}{\sqrt{y^2-x^2}}$ D) $\frac{\sqrt{y^2-x^2}}{y}$

6. If $13\sin\theta = 12$ then $\operatorname{cosec}\theta =$ _____

   A) $\frac{5}{12}$ B) $\frac{13}{5}$ C) $\frac{12}{13}$ D) $\frac{13}{12}$

7. The value of $\text{Sin}30^0 + \cos 60^0$ is _____

   A) 1 B) $\frac{3}{2}$ C) $\frac{1}{4}$ D) $\frac{2}{3}$

8) The value of $\sin 60^0 . \cos 30^0 + \sin 30^0 . \cos 60^0$ is _____

   A) 4 B) 3 C) 2 D) 1

9) If $\tan A = \frac{4}{3}$ then $\cot A =$ _____

   A) $\frac{4}{3}$ B) $\frac{3}{4}$ C) $\frac{4}{5}$ D) $\frac{5}{3}$

10) The value of $\tan 45^0 + \cot 45^0 - \sin 90^0$ is _____

   A) 3 B) 2 C) 1 D) 0

11) The value of $\frac{sin18^\circ}{cos72^\circ}$ is _____

   A) 0 B) 1 C) 2 D) 3

12) The value of $\frac{tan26^\circ}{cot64^\circ}$ is _____

   A) 0 B) 1 C)2 D)3

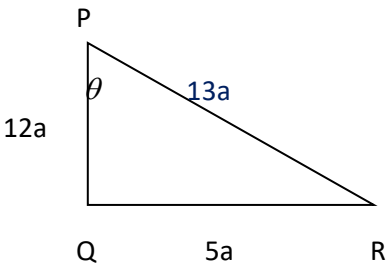
13) The value of $\frac{tan65^\circ}{cot25^\circ}$ is _____

A) 0 B) 1 C) 2 D) 3

14) The value of $\cos48^0 - \sin42^0$ is _____

A) 0 B) 1 C) $\frac{1}{2}$ D) -1

15) In the figure the value of $\sin\theta$ is_____



A) $\frac{5}{13}$ B) $\frac{12}{13}$

C) $\frac{13}{12}$ D) $\frac{13}{5}$

16) $\sin^2\theta + \cos^2\theta$ = _____

A) -1 B) 1 C) 0 D) 2

17) In a ΔABC, $\hat{B}=90^0$, AB=24 cm and BC=7cm then tanC =_____

A)$\frac{12}{7}$ B)$\frac{24}{7}$ C)$\frac{7}{12}$ D)$\frac{7}{24}$

18) $1-\cos^2A$ = _____

A) $\sin^2A$ B) $\tan^2A$ C)$1-\sin^2A$ D)$\sec^2A$

19) $\sec^2\theta$ - 1 = _____

A) $\tan^2\theta$ B) $\tan^2\theta+1$ C) $\cot^2\theta-1$ D)$\cos^2\theta$

20) The value of $9\sec^2A - 9\tan^2A$ is _____

A) 1 B) 9 C) 8 D) 0

21) $\tan\theta.\cot\theta$ = _____

A) $\cot\theta$ B) $\tan\theta$ C) $\tan^2\theta$ D) 1

22) If $\sqrt{3}\tan\theta=1$ then the value of 'θ' is _____

A) 0^0 B) 30^0 C) 45^0 D) 60^0

23) The value of $\sin^2 30^0 - \cos^2 30^0$ is _____

A) $-\frac{1}{2}$ B) $\frac{\sqrt{3}}{2}$ C) $\frac{3}{2}$ D) $-\frac{2}{3}$

24) The value of $\frac{1-\tan^2 45^\circ}{1+\tan^2 45^\circ}$ is _____

A) $\tan 90^0$ B) 1 C) $\sin 45^0$ D) 0

25) If we express $\operatorname{cosec}\theta$ in the form of $\cot\theta$, then $\operatorname{cosec}\theta$ = _____

A) $\cot\theta$ B) $\cot^2\theta - 1$ C) $\sqrt{1+\cot^2\theta}$ D) $1+\cot^2\theta$

26) If sinA = $\frac{1}{2}$ and cosB = $\frac{1}{2}$ then A + B =_____

A) 0^0 B) 30^0 C) 60^0 D) 90^0

27) In a ΔABC if $\hat{C}=90^0$, then sin(A + B)= _____

A) 0 B) $\frac{1}{2}$ C) $\frac{1}{\sqrt{2}}$ D) 1

28) If $\sin\theta = \frac{1}{2}$ and $\cos\theta = \frac{\sqrt{3}}{2}$, then $\tan\theta$ = _____

A) $\sqrt{3}$ B) $\frac{1}{2}$ C) $\frac{\sqrt{2}}{3}$ D) $\frac{1}{\sqrt{3}}$

29) In a ΔABC $\hat{B}=90^0$ tanA= $\frac{1}{\sqrt{3}}$, then sinA= _____

A) 0 B) $\frac{1}{2}$ C) $\frac{\sqrt{3}}{2}$ D) $\frac{1}{\sqrt{2}}$

30) In sinA, $0 \leq A \leq 90^\circ$ then the least value of sinA is _____

A) -1 B) 0 C) $\frac{1}{\sqrt{2}}$ D) $\frac{1}{2}$

31) If sin2A = 2sinA then the value of A is _____

A) 30^0 B) 45^0 C) 0^0 D) 90^0

32) In a ΔABC, $\hat{B}=90^0$ and $\hat{C}=30^0$ then AB : AC is _____

A) 1 : 2 B) 2 : 1 C) $\sqrt{3}$: 2 D) 2 : $\sqrt{3}$

33) If tanA = cotB , then A + B = _____

A) 90^0 B)60^0 C) 30^0 D)0^0

34) The value of $\tan1^0.\tan2^0.\tan3^0. \ldots\ldots\ldots\ldots \tan89^0$ is _____

A) 0 B)1 C)2 D) $\frac{1}{2}$

35) $\frac{2tan30°}{1+tan^2 30°}$ = _____

A) $\sin60^0$ B)$\cos60^0$ C)$\tan60^0$ D)$\sin30^0$

36) $\frac{1+tan^2 A}{1+cot^2 A}$ = _____

A) $\sec^2A$ B) -1 C) $\cot^2A$ D) $\tan^2A$

37) If sinA – cosA = 0 then the value of $\sin^4A + \cos^4A$ is _____

A) 2 B)1 C) $\frac{3}{4}$ D) $\frac{1}{2}$

38) if $\sin\theta + \sin^2\theta = 1$ then the value of $\cos^2\theta + \cos^4\theta$ is _____

A) -1 B) 1 C)0 D) 2

ANSWERS:

1	C	11	B	21	D	31	C
2	C	12	B	22	B	32	A
3	A	13	B	23	A	33	A
4	A	14	A	24	D	34	B
5	D	15	B	25	C	35	A
6	D	16	B	26	D	36	D
7	A	17	B	27	D	37	D
8	D	18	A	28	D	38	B
9	B	19	A	29	B		
10	C	20	B	30	B		

12. Applications of trigonometry

Multiple choice questions

1) The shadow of a tower is equal to its height at 10-45 a.m. The sun's altitude is
(A)30° (B)45° (C)60° (D) 90°
2) The line drawn from the eye of an observer to the point in the object viewed by the observer is known as
(A)horizontal line (B)vertical line (C)line of sight (D) transversal line
3) The angle of elevation of the top of a tower from a point 20 metres away from its base is 45°. The height of the tower is
(A) 10 m (B) 20 m (C) 30 m (D) 20√3 m
4) If the length of the shadow of a tower increases, then the angle of elevation of the sun
(A) is also increases (B) decreases
(C) remains unaffected (D) increases then decreases
5) The angle of elevation of the top of a tower is 30°. If the height of the tower is doubled, then the angle of elevation of its top will
(A) also get doubled (B) will get halved
(C) will be less than 60° (D) 30°
6) If a pole 6m high casts a shadow $2\sqrt{3}$ m long on the ground, then the sun's elevation is (A) 60° (B) 45° (C) 30° (D)90°
7) The line drawn from the eye of an observer to the point of an object is _____

A)Horizontal line B)Vertical line C)Line of sight D)The oblique line

ANSWERS:

1	2	3	4	5	6	7
B	C	B	B	C	A	A

Statistics

Points to remember

1. **Mean for groupd data**

Direct method to find mean $\text{mean}, \ \bar{x} = \frac{\sum f_i x_i}{\sum f_i}$

2. **Mode for grouped data** $= L + \left[\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right] X\ h$

3. **Median for grouped of** $= L + \left[\frac{\frac{N}{2} - cf}{f}\right] X\ h$

Multiple choise questoins

1) If the mean value of 'x',6,8,9 and 12 is 8, then the value of 'x' is

A) 4 B) 5 C) 16 D) 10

2) The median of the scores 5,8,14,16,19 and 20 is

A) 14 B) 15 C) 16 D) 17

3) The wickets taken by a bowler in 10 cricket matches are as follows :

2,6,4,5,0,2,1,3,2,3 then the mode of the data is

A) 0 B)1 C) 2 D)3

4) The emperical relationship between the three measures of central tendency is

A) 3 median = mode + 2 mean B) 2 median = mode + 3 mean

C) median = mode + mean D) median = mode – mean

5) Class mark for the class 10 – 25 is

A) 10.5 B)12.5 C)15.5 D) 17.5

6) Size of the class interval 40-50 is

ಗಾತ್ರ A) 10 B) 15 C) 20 D) 25

7) Modal class for the given distribution is

CI	1-3	3-5	5-7	7-9	9-11
F	7	8	2	2	1

A) 1-3 B) 3-5 C) 5-7 D) 9-11

8) The frequency(f_0) of class preceding the modal class for the given distribution is

CI	5-15	15-25	25-35	35-45	45-55	55-65
f	6	11	21	23	14	5

A) 6 B) 11 C) 21 D) 23

9) The frequency (f_2) of class succeeding the modal class for the given distribution is

CI	1-3	3-5	5-7	7-9	9-11
F	7	8	2	2	1

A) 7 B) 8 C) 2 D) 1

10) The middle most score in an orderly arranged data is

A) Mean B) Median C) Mode D) Range

11) The mean of first five odd natural positive integers is

A) 5 B) 7 C) 9 D) 25

12) The sum of the values of all the observations divided by the total number of observations is

A) Range B)Mean C) Median D) Mode

13) Cumulative frequency is useful in determining the

(A) mean (B) median (C) mode (D) range

14) Which of the following is not a measure of central tendency

(A) mean (B) median (C) mode (D) range

15) Classmark of the class 10 – 20 is

A) 10 B) 20 C) 15 D) 30

16) Size of the class interval 25-35 is

A) 25 B) 10 C) 35 D) 15

17) Mode for the data 12,15,14,13,12,15,18,25,16,15,20,18

A)15 B) 18 C) 12 D) 25

18) Modal class for the distribution

C.I	0-10	10-20	20-30	30-40	40-50	50-60	60-70
f	3	5	8	12	10	6	4

A) $20-30$ B) $30-40$ C) $40-50$ D) $50-60$

19) Formula to find median is

A) $L+\left[\frac{\frac{N}{2}-cf}{f}\right]Xh$ B) $L+\left[\frac{\frac{N}{2}+cf}{f}\right]Xh$

C) $L+\left[\frac{f_1-f_0}{2f_1-f_0-f_2}\right]Xh$ D) $L+\left[\frac{f_1-f_0}{2f_1-f_0+f_2}\right]Xh$

20) Median class for the distribution

C.I	0-10	10-20	20-30	30-40	40-50	50-60	60-70
f	3	8	16	28	38	46	50

A) $20-30$ B) $30-40$ C) $40-50$ D) $50-60$

21) Mean for the following scores 12,14,10,13,11 is

A)10 B) 14 C) 12 D) 15

22) The formula used to find mode of the grouped data

A) $l+ [\frac{n/2-cf}{f}] \times h$ B) $\frac{\sum fixi}{\sum fi}$ C) $l + [\frac{f1-f0}{2f1-f0-f2}] \times h$ D) $l + [\frac{f1-f0}{2f1-f0-f2}]$

23) If the median is 36 and mean is 18 ,then the value of the mode is

A) 36 B) 72 C) 18 D) 648

24) If the mean of 12 numbers is 20 then their algebraic sum is

A) 200 B) 32 C) 240 D)180

25) If $\sum f_i = 20$, $\sum f_i x_i = 140+5k$ and $\bar{X} = 9$ find K

A) 2 B) 4 C) 8 D) 6

26) The Median of 13,12,5,8,11,9 is

A) 5 B) 6.5 C) 10 D) 9.5

27) For the given frequency distribution table answer the following question

C-I Marks scored	F No of Students
0-10	11
10-20	9
20-30	8
30-40	12
40-50	10
50-60	10

i. The modal class is

A) 50-60 B) 30-40 C) 0-10 D) 20-30

ii. upper limit of the modal class is

A) 20 B) 30 C) 40 D) 50

iii. Value of ' h ' (class mark of modal class) is

A) 10 B) 20 C) 30 D) 40

iv. The number of Students who scored more than 40 marks

A) 32 B) 12 C) 20 D) 17

ANSWERS:

1	B	7	B	13	B	19	A	25	C
2	B	8	C	14	D	20	B	26	C
3	C	9	C	15	C	21	C	27(i)	B
4	A	10	B	16	B	22	C	27(ii)	C
5	D	11	A	17	A	23	B	27(iii)	A
6	A	12	B	18	B	24	C	27(iv)	C

Surface area and volume

Points to remember

List of formulae

Sl. no	Solid	C.S.A	T.S.A	Volume
1	Cube	$4a^2$	$6a^2$	a^3
2	Cuboid	$2lb + 2lh$	$2lb + 2lh + 2bh$	lbh
3	Cylinder	$2\pi rh$	$2\pi r^2 + 2\pi rh$	$\pi r^2 h$
4	Cone	πrl	$\pi r^2 + \pi rl$	$\frac{1}{3}\pi r^2 h$
5	Frustum of cone	$\pi(r_1 + r_2)l$	$\pi {r_1}^2 + \pi {r_2}^2 + \pi(r_1 + r_2)l$	$\frac{1}{3}\pi({r_1}^2 + {r_2}^2 + r_1 r_2)h$
6	Sphere	$4\pi r^2$	$4\pi r^2$	$\frac{4}{3}\pi r^3$
7	Hemisphere	$2\pi r^2$	$3\pi r^2$	$\frac{2}{3}\pi r^3$

Important points

- Area of combination of solids is the sum of areas of visible faces.
- Volume of combination of solids is the sum of its constituent solids.
- A solid is converted from one shape in to another , their volumes remain same.

Multiple choice questions.

1) If the area of the circular base of a cylinder is 22 cm^2 and its height is 10 cm , then the volume of the cylinder is

A) 2200 cm^2 B) 2200 cm^3 C) 220 cm^3 D) 220 cm^2

2) The formula used to find the curved surface area of the frustrum of a cone whose radii are r_1 and r_2 and slant height 'l' is

A) $\pi(r_1 + r_2)\, l$ B) $\pi(r_1 - r_2)\, l$ C) $\pi(r_1 \times r_2)\, l$ D) $\pi(r_1 \div r_2)\, l$

3) 2 cubes each of volume $27cm^3$ are joined end to end . The volume of the resulting cuboid is

A) $27cm^3$ B) $54cm^3$ C) $108cm^3$ D) $216cm^3$

4) The volume of a cylinder is $300m^3$ then the volume of a cone having the same radius and height as that of the cylinder is

A) 900 m^3 B) 600 m^3 C) 150 m^3 D) 100 m^3

5) If two solid hemisphere of same radius are joined together along with their bases . Then the surface area of their new solid is

A) $2\pi r^2$ B) $3\pi r^2$ C)$4\pi r^2$ D) $6\pi r^2$

6) Volume of a sphere with radius 'r' is

A) $\frac{3}{4}\pi r^3$ B) $\frac{3}{2}\pi r^3$ C) $\frac{2}{3}\pi r^3$ D) $\frac{4}{3}\pi r^3$

7) A cylinder and a cone are of same base , radius and of same height . The ratio of the volume of the cylinder to that of the cone is

A) 2:1 B) 3:1 C) 2:3 D) 3:2

8) The curved surface area of a right circular cylinder is 440 cm^2 and its radius is 7cm, its height is

A) 3.5 cm B) 7cm C) 10cm D)14cm

9) A cylindrical pencil sharpened at one edge is the combination of

A) Two cylinders

B) A hemisphere and a cylinder

C) Frustrum of a cone and a cylinder

D) a cone and a cylinder

10) A cone made of modelling clay whose height is 24cm and radius of base 6 cm is reshaped into sphere, then the radius of sphere is

A) 3 cm B)6cm C) 12cm D)24 cm

11) The surface area of a sphere of radius 7 cm is

A) $154cm^2$ B)$308cm^2$ C) $616cm^2$ D) $770cm^2$

12) A solid formed on revolving a right angled triangle about its height is

A) Cuboid B) Cylinder C) Sphere D) Rightcircular cone

13) A toy is in the form of a cone mounted on a hemisphere of same radius . The total surface area of the toy is

A) $\pi rl+2\pi r^2$ B) $\pi rl+\pi r^2$ C)2 $\pi rl+\pi r^2$ D) $2\pi rl+2\pi r^2$

14) Formula to find volume of a cylinder is

A] $\pi\, r^2 h$ **B]** $\frac{1}{3}\pi\, r^2 h$

C] $\pi\, rl$ **D]** $2\pi\, rh$

15) The solid which is having only one surface is

A] Sphere **B]** Hemisphere **C]** Cylinder **D] Cone**

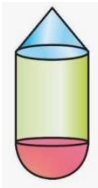
16) The ratio of areas of two spheres with the ratio of their radii 2:3 is

A] 2:3 **B]** 3:2 **C]** 4:9 **D]** **16:9**

17) Formula to find total surface area of a hemisphere is

A] πr^2 **B]** $3\pi r^2$ **C]** $2\pi r^2$ **D]** $4\pi r^2$

18) **A**Constituent solids in the given combination of solid figure are



A]cylinder , cone **B] Cylinder , cone , hemisphere**

C] Cylinder , cone , sphere **D] cube , cone , hemisphere**

19) The length of each edge of a cube with its volume 1331 cm^3 is

(A) 12cm (B) 11cm (C) 15cm (D) 13cm

20) A solid formed on revolving a side of a rectangle is

A) Cuboid B) Cylinder C) Sphere D) Rightcircular cone

Answers:

1	C	6	D	11	C	16	C
2	A	7	B	12	D	17	B
3	B	8	C	13	A	18	B
4	D	9	D	14	A	19	B
5	C	10	B	15	A	20	B