ಕರ್ನಾಟಕ ಸರ್ಕಾರ

ಜಿಲ್ಲಾಡಳಿತ, ದಾವಣಗೆರೆ

ಜಿಲ್ಲಾ ಪಂಚಾಯತ್, ದಾವಣಗೆರೆ

ಉಪನಿರ್ದೇಶಕರ ಕಚೇರಿ, ಸಾರ್ವಜನಿಕ ಶಿಕ್ಷಣ ಇಲಾಖೆ

ದಾವಣಗೆರೆ ಜಿಲ್ಲೆ

"ಸಂಕಲ್ಪ–2020–21"

ಎಸ್.ಎಸ್.ಎಲ್.ಸಿ "ಗಣಿತ" ಕಲಿಕಾ ಮಾರ್ಗದರ್ಶಿ

ENGLISH MEDIUM

ಮಾರ್ಗದರ್ಶನ

ಶ್ರೀ ಎಸ್.ಆರ್.ಉಮಾಶಂಕರ್

ಸರ್ಕಾರದ ಪ್ರಧಾನ ಕಾರ್ಯದರ್ಶಿಗಳು, ಶಿಕ್ಷಣ ಇಲಾಖೆ
(ಪ್ರಾಥಮಿಕ ಮತ್ತು ಪ್ರೌಢಶಿಕ್ಷಣ)
ಹಾಗೂ
ಜಿಲ್ಲಾ ಉಸ್ತುವಾರಿ ಕಾರ್ಯದರ್ಶಿಗಳು,ದಾವಣಗೆರೆ ಜಿಲ್ಲೆ

ಶ್ರೀ ವಿಜಯ ಮಹಾಂತೇಶ್ ದಾನಮ್ಮನವರ್
ಮುಖ್ಯಕಾರ್ಯನಿರ್ವಾಹಕ ಅಧಿಕಾರಿಗಳು
ಜಿಲ್ಲಾ ಪಂಚಾಯತ್ ದಾವಣಗೆರೆ

ಶ್ರೀ ಮಹಾಂತೇಶ್ ಬೀಳಗಿ
ಜಿಲ್ಲಾಧಿಕಾರಿಗಳು
ದಾವಣಗೆರೆ

ಉಪನಿರ್ದೇಶಕರ ಕಚೇರಿ, ಸಾರ್ವಜನಿಕ ಶಿಕ್ಷಣ ಇಲಾಖೆ, ದಾವಣಗೆರೆ ಜಿಲ್ಲೆ

ಪರಿಕಲ್ಪನೆ

ಶ್ರೀ ಮಂಜುನಾಥ್.ಹೆಚ್
ಸಹನಿರ್ದೇಶಕರು ಮತ್ತು ಪ್ರಾಂಶುಪಾಲರು
ಸಿ.ಟಿ.ಇ ಚಿತ್ರದುರ್ಗ
ದಾವಣಗೆರೆ ಜಿಲ್ಲಾ ಎಸ್.ಎಸ್.ಎಲ್.ಸಿ. ನೋಡಲ್ ಅಧಿಕಾರಿಗಳು

ಶ್ರೀ ಲಿಂಗರಾಜು.ಹೆಚ್.ಕೆ
ಪ್ರಾಂಶುಪಾಲರು ಹಾಗೂ
ಪದನಿಮಿತ್ತ ಉಪನಿರ್ದೇಶಕರು(ಅಭಿವೃದ್ಧಿ)
ಡಯಟ್,ದಾವಣಗೆರೆ

ಶ್ರೀ ಸಿ.ಆರ್.ಪರಮೇಶ್ವರಪ್ಪ
ಉಪನಿರ್ದೇಶಕರು(ಆಡಳಿತ)
ಸಾರ್ವಜನಿಕ ಶಿಕ್ಷಣ ಇಲಾಖೆ
ದಾವಣಗೆರೆ

ಸಲಹೆ

ಶ್ರೀ ಜಗದೀಶ್ವರ.ಬಿ.ಎಸ್. ಶಿಕ್ಷಣಾಧಿಕಾರಿಗಳು,ಉಪನಿರ್ದೇಶಕರ ಕಛೇರಿ,ದಾವಣಗೆರೆ

ಶ್ರೀ ರವಿ.ಎಲ್. ಉಪಯೋಜನ ಸಮನ್ವಯಾಧಿಕಾರಿಗಳು ಎಸ್.ಎಸ್.ಕೆ,ದಾವಣಗೆರೆ.

ಶ್ರೀ ಮಂಜುನಾಥಸ್ವಾಮಿ ಎಂ. ಉಪಯೋಜನ ಸಮನ್ವಯಾಧಿಕಾರಿಗಳು ಎಸ್.ಎಸ್.ಕೆ,ದಾವಣಗೆರೆ

ಶ್ರೀ ಕೋಟ್ರೇಶ್.ಜಿ ಕ್ಷೇತ್ರ ಶಿಕ್ಷಣಾಧಿಕಾರಿಗಳು,,ದಾವಣಗೆರೆ ಉತ್ತರ ವಲಯ.

ಶ್ರೀ ಮಂಜುನಾಥ್.ಕೆ. ಕ್ಷೇತ್ರ ಶಿಕ್ಷಣಾಧಿಕಾರಿಗಳು,,ಚನ್ನಗಿರಿ

ಶ್ರೀ ರಾಜೀವ್.ಜಿ.ಇ ಕ್ಷೇತ್ರ ಶಿಕ್ಷಣಾಧಿಕಾರಿಗಳು, ಹೊನ್ನಾಳಿ.

ಶ್ರೀ ಬಸವರಾಜಪ್ಪ.ಯು ಕ್ಷೇತ್ರ ಶಿಕ್ಷಣಾಧಿಕಾರಿಗಳು, ಹರಿಹರ

ಶ್ರೀ ವೆಂಕಟೇಶ್. ಕ್ಷೇತ್ರ ಶಿಕ್ಷಣಾಧಿಕಾರಿಗಳು, ಜಗಳೂರು.

ಶ್ರೀ ನಿರಂಜನಮೂರ್ತಿ.ಎಂ .ಕ್ಷೇತ್ರ ಶಿಕ್ಷಣಾಧಿಕಾರಿಗಳು, ದಾವಣಗೆರೆ ದಕ್ಷಿಣ ವಲಯ.

ಸಮನ್ವಯ

ಶ್ರೀ ಸುರೇಶಪ್ಪ ಎಂ, ಗಣಿತ ವಿಷಯ ಪರಿವೀಕ್ಷಕರು, ಉಪನಿರ್ದೇಶಕರ ಕಚೇರಿ, ದಾವಣಗೆರೆ

ಸಹಕಾರ

ಜಿಲ್ಲಾ ಪ್ರೌಢಶಾಲಾ ಮುಖ್ಯೋಪಾಧ್ಯಾಯರ ಸಂಘ,ದಾವಣಗೆರೆ.

ಜಿಲ್ಲಾ ಪ್ರೌಢಶಾಲಾ ಸಹಶಿಕ್ಷಕರ ಸಂಘ,ದಾವಣಗೆರೆ.

ಸಂಪನ್ಮೂಲ ರಚನೆ-

ಶ್ರೀಮತಿ ಸುಜಾತ ಹೆಚ್ ಎನ್, ಸಹ ಶಿಕ್ಷಕಿ,

ರಾಜನಹಳ್ಳಿ ಸೀತಮ್ಮ ಬಾಲಕಿಯರ ಸರ್ಕಾರಿ ಪದವಿಪೂರ್ವ ಕಾಲೇಜು,(ಪ್ರೌಢಶಾಲಾ ವಿಭಾಗ),

ದಾವಣಗೆರೆ ದಕ್ಷಿಣ ವಲಯ

ಶ್ರೀಮತಿ ಭುವನೇಶ್ವರಿ ಡಿ ಕೆ.,ಸಹಶಿಕ್ಷಕಿ,ಸರ್ಕಾರಿ ಪದವಿಪೂರ್ವ ಕಾಲೇಜು (ಪ್ರೌಢಶಾಲಾ ವಿಭಾಗ),

ಚನ್ನಗಿರಿ.

ಶ್ರೀಮತಿ ರೀನಾ ಎನ್ ಎಂ,ಸಹಶಿಕ್ಷಕಿ, ಸರ್ಕಾರಿ ಪ್ರೌಢಶಾಲೆ, ಗುತ್ತೂರು,ಹರಿಹರ ತಾಲೂಕು

ಶ್ರೀಮತಿ ಸರೋಜಿನಿ ಕೆ ಸಿ,ಸಹಶಿಕ್ಷಕಿ,ಸರ್ಕಾರಿ ಪ್ರೌಢಶಾಲೆ, ಕೊಕ್ಕನೂರು,ಹರಿಹರ ತಾಲೂಕು

ಶ್ರೀಮತಿ ಲಕ್ಷ್ಮೀ ಬಿ, ಸಹಶಿಕ್ಷಕಿ,ಸರ್ಕಾರಿ ಪದವಿಪೂರ್ವ ಕಾಲೇಜು (ಪ್ರೌಢಶಾಲಾ ಭಾಗ),

ಕೂಲಂಬಿ- ಕುಂದೂರು. ಹೊನ್ನಾಳಿ ತಾಲೂಕು.

ಶ್ರೀಮತಿ ಅಂಜನಾ ರಾವ್, ಸಹಶಿಕ್ಷಕಿ,ಕರ್ನಾಟಕ ಪಬ್ಲಿಕ್ ಸ್ಕೂಲ್, ನ್ಯಾಮತಿ,ಹೊನ್ನಾಳಿ ತಾಲೂಕು.

ಸಂಪನ್ಮೂಲ ಪರಿಶೀಲನೆ-1. ಶ್ರೀಮತಿ ಭವಾನಿ ಕೆ ಎಂ,ಸಹಶಿಕ್ಷಕಿ, ಸರ್ಕಾರಿ ಉರ್ದು ಪ್ರೌಢಶಾಲೆ,

ಜೋಡಿ ಹೊಸೂರು,ಚನ್ನಗಿರಿ.

2. ಶ್ರೀಮತಿ ಅನಿತಾ ಬಿ ಆರ್, ಸಹಶಿಕ್ಷಕಿ, ಸರ್ಕಾರಿಪ್ರೌಢಶಾಲೆ

ಹಿರೇ ತೊಗಲೇರಿ, ದಾವಣಗೆರೆ ದಕ್ಷಿಣ ವಲಯ.

3. ಶ್ರೀಮತಿ ಅನಿತಾ ಬಿ ಎಂ, ಸಹಶಿಕ್ಷಕಿ, ಸರ್ಕಾರಿಪ್ರೌಢಶಾಲೆ,

ರಸ್ತೆ ಮಾಚಿಕೆರೆ, ಜಗಳೂರು ತಾ

-ವಿಡಿಯೋಗಳನ್ನು ತಯಾರಿಸಿದವರು-

1. ಶ್ರೀಮತಿ ಸುಜಾತ ಹೆಚ್ ಎನ್ 2. ಶ್ರೀಮತಿ ಸರೋಜಿನಿ ಕೆ ಸಿ

3. ಶ್ರೀಮತಿ ರೀನಾ ಎನ್ ಎಂ 4. ಶ್ರೀಮತಿ ಲಕ್ಷ್ಮೀ ಜಿ

PREPARATION MATERIAL

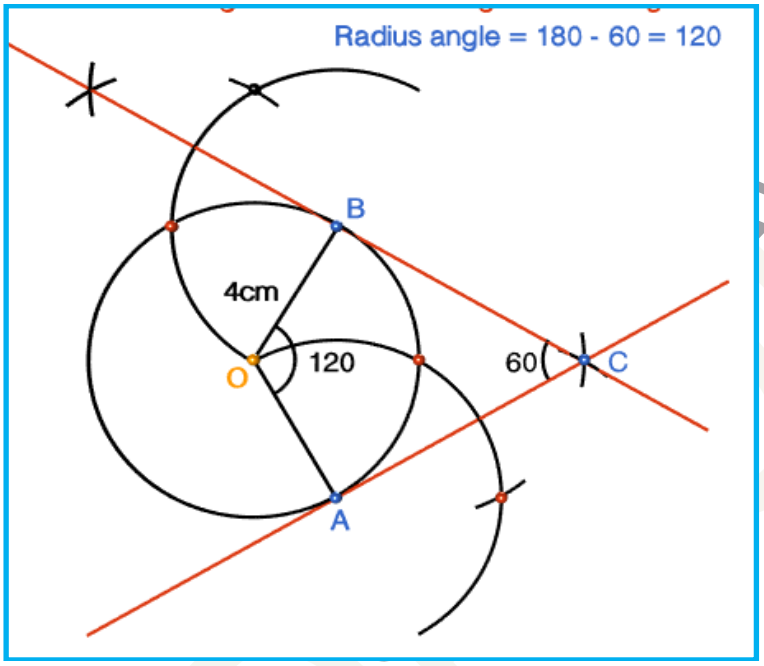
S S L C EXAMINATION : 2020 - 2021

CONSTRUCTIONS

STATE LEVEL PREPARATORY EXAMINATION – 2019

1. Draw a circle of radius 4 cm and construct a pair of tangents to the circle such that the angle between the tangent is 60º.

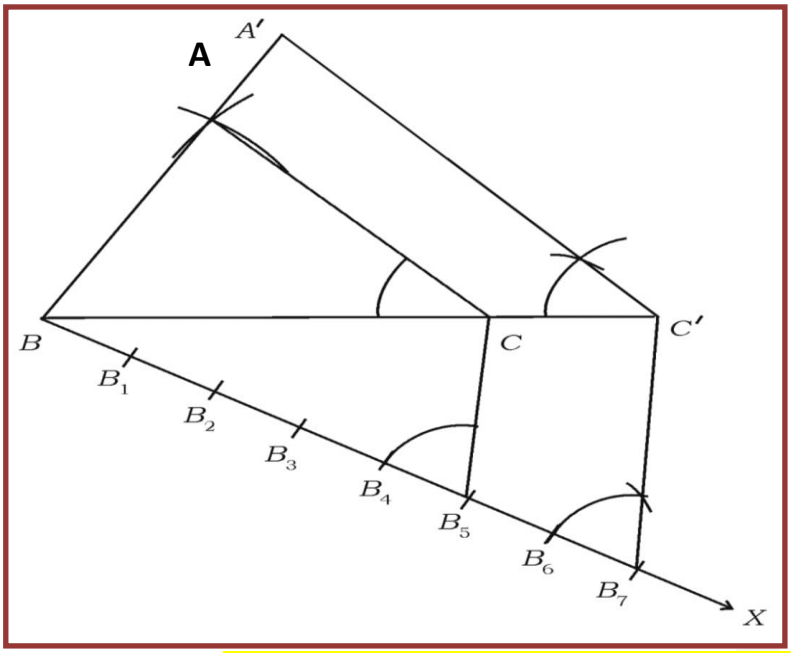
Two Mark Question



Tangent construction (When Angle between the tangents are given)
Click here / Scan

2. Construct a triangle with sides are 5 cm, 6cm and 7cm, and then construct another triangle whose side are $\frac{7}{5}$ of the corresponding sides of the constructed triangle.

Three Mark Question

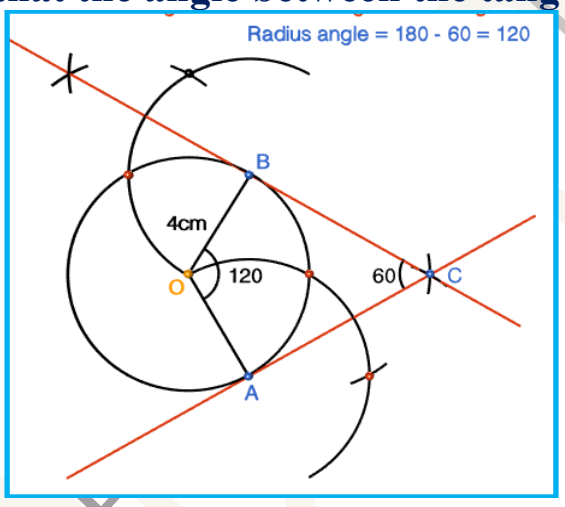


Similar triangle construction (When ratio given in proper fraction)
Click here/Scan

ANNUAL EXAMINATION : MARCH / APRIL – 2019

3. Draw a circle of radius 4 cm and construct a pair of tangents to the circle such that the angle between the tangent is 60º.

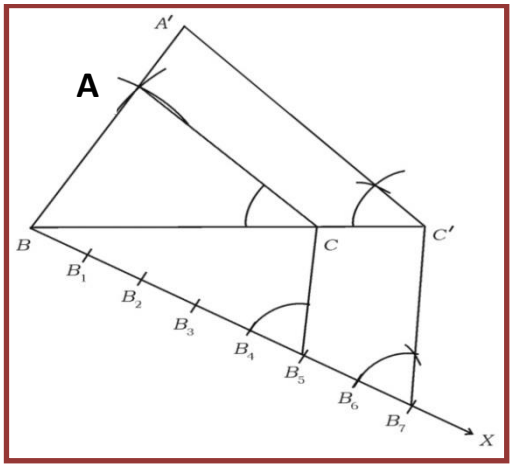
Two Mark Question



Tangent construction (When Angle between the tangents are given)Click here/Scan

4. Construct a triangle with sides are 4 cm, 5cm and 6cm, and then construct another triangle whose side are $\frac{7}{5}$ of the corresponding sides of the constructed triangle.

Three Mark Question

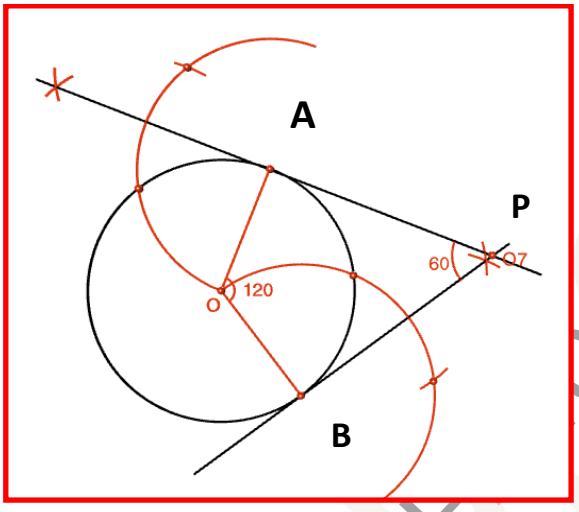


Similar triangle construction (When ratio given in proper fraction) Click here/Scan

ANNUAL EXAMINATION : JUNE – 2019

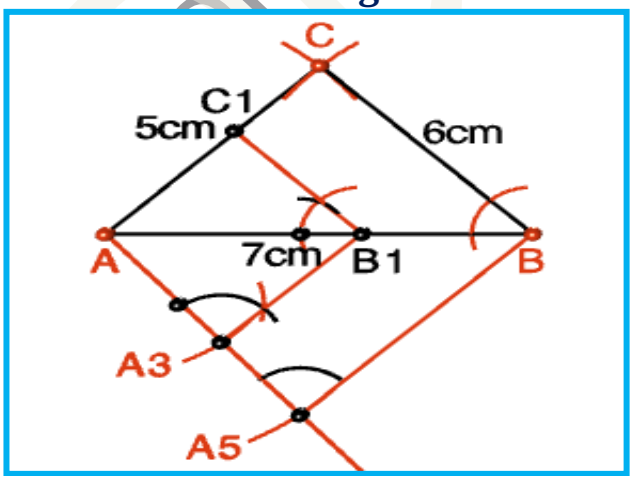
5. Draw a circle of radius 3.5 cm and construct a pair of tangents to the circle such that the angle between the tangent is 60º.

Two Mark Question



Tangent construction (When Angle between the tangents are given) Click here/Scan

6. Construct a triangle with sides are 5 cm, 6cm and 7cm, and then construct another triangle whose side are $\frac{3}{5}$ of the corresponding sides of the constructed triangle.

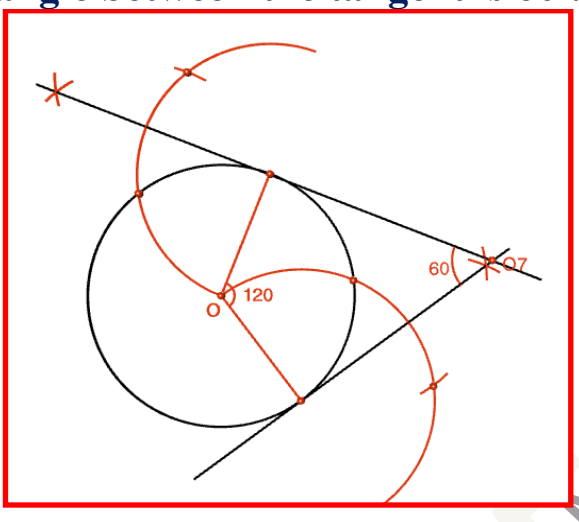


Similar triangle construction (improper fraction) Click here / Scan

ANNUAL EXAMINATION : JUNE – 2020

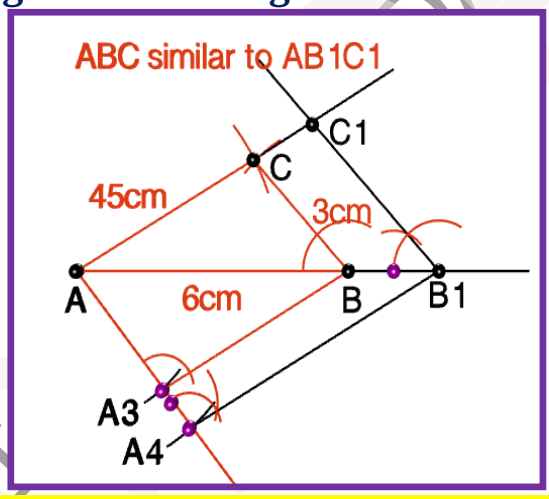
7. Draw a circle of radius 3 cm and construct a pair of tangents to the circle such that the angle between the tangent is 60º.

Two Mark Question



8. Construct a triangle ABC with sides BC = 3 cm, AB = 6 cm and AC = 4.5 cm. Then construct a triangle whose sides are $\frac{4}{3}$ of the corresponding sides of triangle ABC.

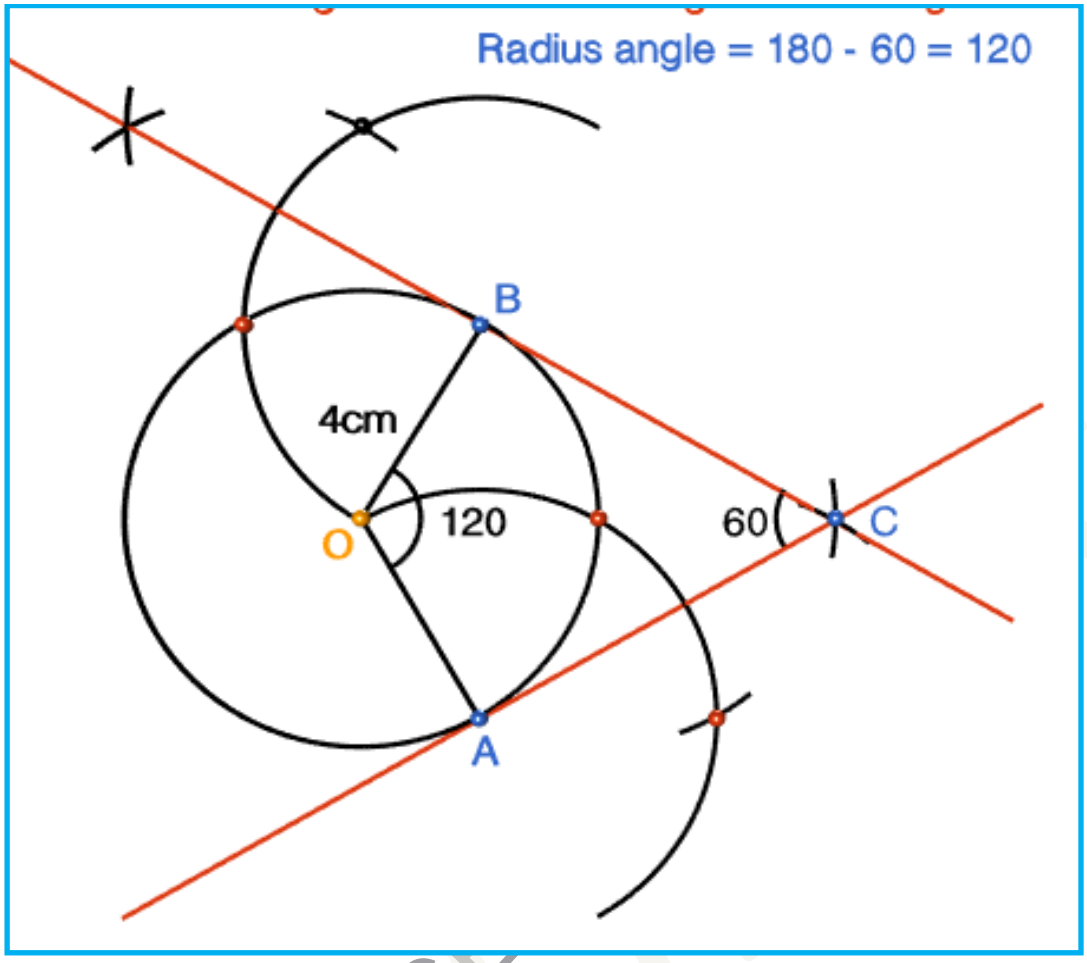
Three Mark



ANNUAL EXAMINATION : SEPTEMBER – 2020

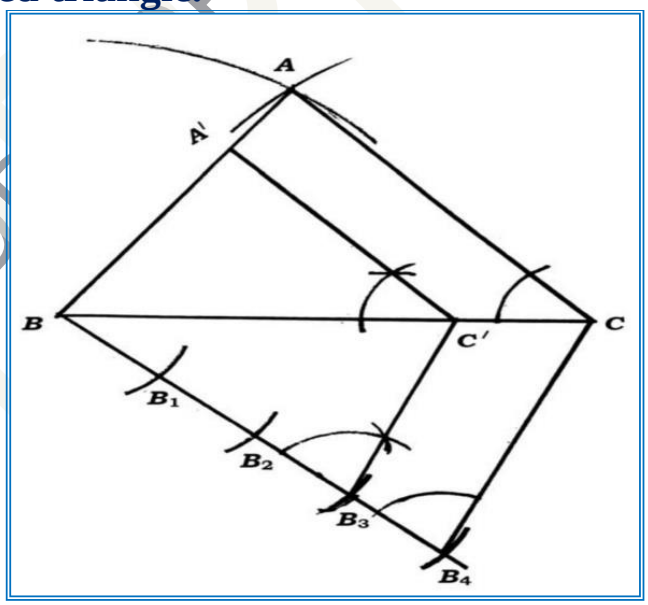
9. Draw a circle of radius 4 cm and construct a pair of tangents to the circle such that the angle between the tangent is 60º.

Two Mark Question



10. Construct a triangle with sides are 6 cm, 7cm and 8cm, And then construct another triangle whose side are $\frac{3}{4}$ of the corresponding sides of the constructed triangle.

Three Mark Question

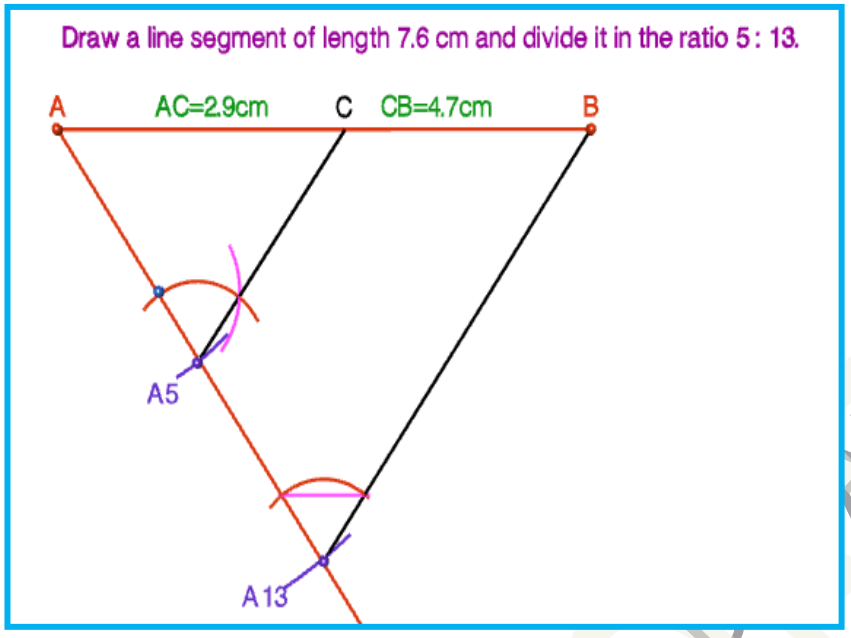


Additional Expected constructions in S S L C annual Exam : 2020 - 2021

Two Mark Questions

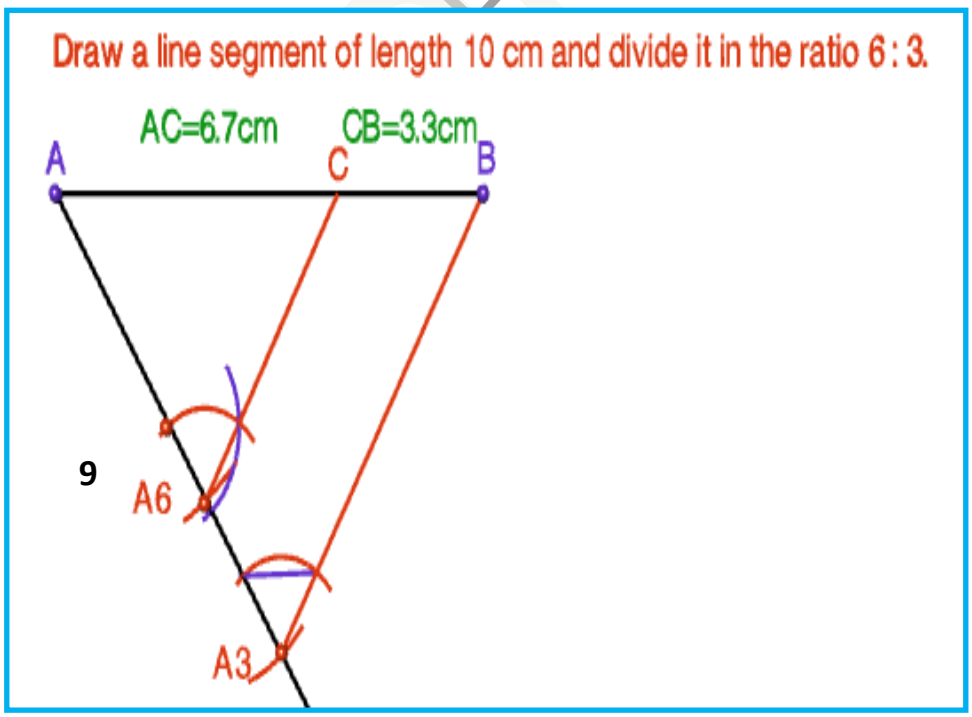
I . LINE BISECT

11) Draw a line segment of length 7.6 cm and divide it in the ratio 5 : 8.



How to divide a line segment (3:4)
Click here/Scan

12) Draw a line segment of length 10 cm and divide it in the ratio 6 : 3.



How to divide a line segment (4:3)

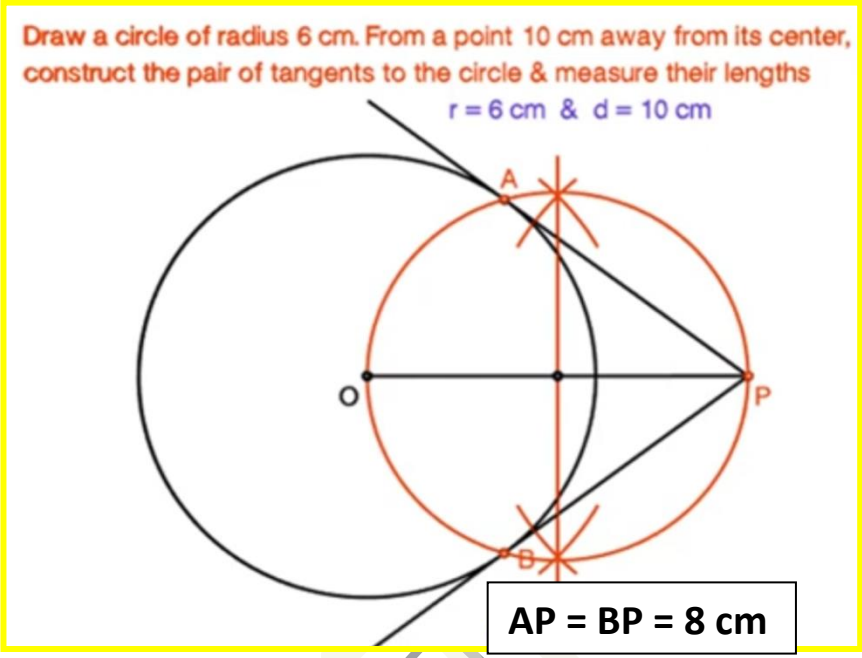
Do your self

13) Draw a line segment of length 9 cm and divide it in the ratio 4 : 7.

14) Draw a line segment of length 12 cm and divide it in the ratio 2 : 5.

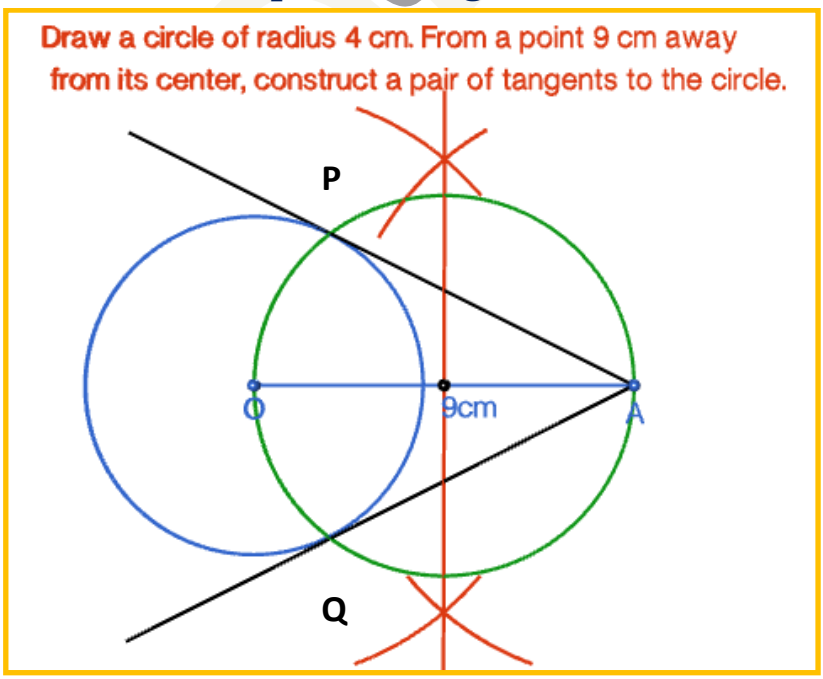
II. TANGENT CONSTRUCTIONFROM EXTERNAL POINT TO CIRCLE

15) Draw a circle of radius 6 cm. From a point 10 cm away from its center, construct a pair of tangents to the circle.



Tangent construction (from an external point of the circle)
Click here/Scan

16) Draw a circle of radius 4 cm. From a point 9 cm away from its center, construct a pair of tangents to the circle.



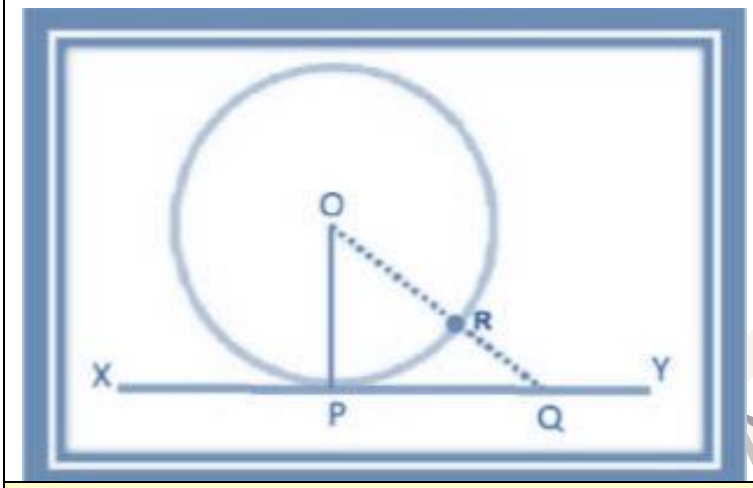
Tangent construction (from an external point of the circle)
Click here/Scan

CIRCLES

Three Mark Question

CIRCLE THEORM - 1

Statement : The tangent at any point of a circle is perpendicular to the radius through the point of contact.



Data : ‘ XY ’ is tangent
‘O’ is center of circle
‘P’ is point of contact
‘OP’ is radius of the circle

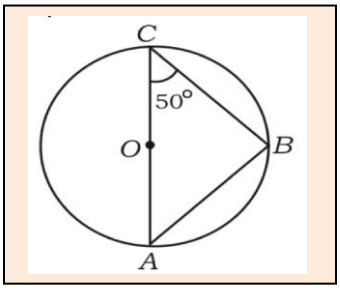
To Prove : OP ⊥ XY

Construction :
Make a point Q on XY,
join OP & OQ
OQ intersect the circle at point R

: Proof :
Compare OQ &OR , OQ > OR
But, OP = OR (Radii of the same circle)
OQ > OP (By construction)
So, OP is the shorter distance to XY
∴ OP ⊥ XY

CIRCLE THEOREM4.1/CLICK HERE

1) In the figure, ‘O’ is the centre of a circle. AC is a diameter . If ∠ACB = 50^0 . Then find the measure of ∠BAC



Answer : ∠ABC = 90^0 [∵ Angle in a semicircle]
So, ∠BAC = $180^0 – 50^0 – 90^0$

∠BAC = 40^0

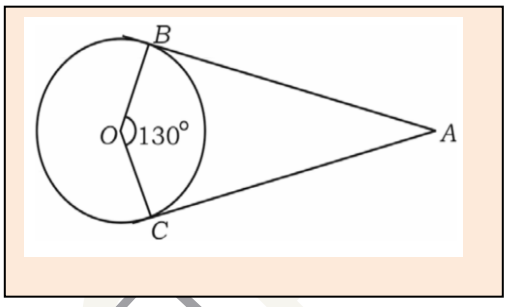
2) A straight line passing through a point on a circle is
(A) a tangent (B) a secant (C) a radius (D) a transversal

Answer : (A) a tangent

3) In the figure AB & AC are the two tangents drawn from the external point a to the circle with center O. If ∠BOC = 130^0, then find ∠BAC.

Answer : ∠BAC = $180^0 - 130^0$

= 50^0



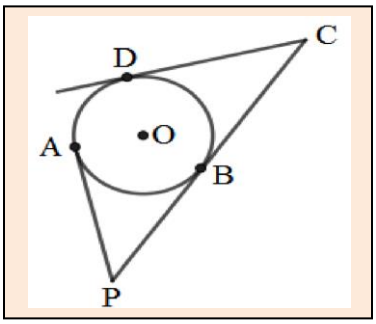
4) A straight line passing through two distinct points on a circle is

(A) a tangent (B) a secant (C) a radius (D) a transversal

Answer : (B) a secant

5) In the following figure PA,PC and DC are tangents drawn to a circle of Center O. If AP = 3 cm, CD = 5cm, then the length of PC is

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



Answer : C) 8cm

BP = 3 cm & CB = 5cm

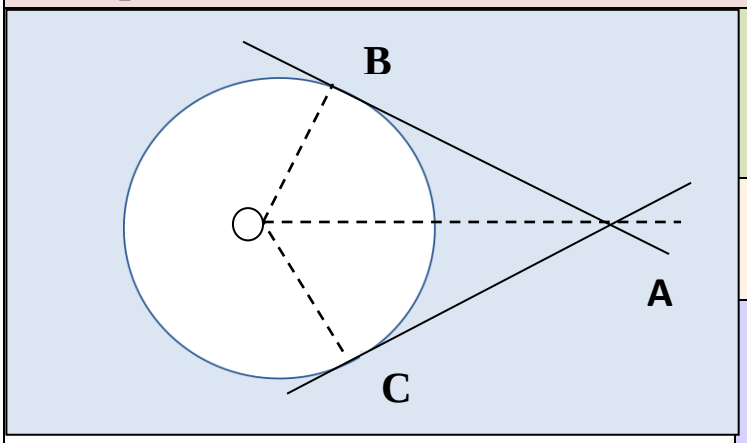
[∵ AP = PB and CD = CB]

PC = PB + BC = 3 + 5 = 8cm

Three Mark Question

CIRCLE THEORM – 4.2 (March - 19, June - 19, June - 20, sept - 20)

Statement : The length of tangents drawn from an external point to a circle are equal .



Data : AB & AC are tangents
O is center of circle &
A is an external point

To Prove : AB = AC

Construction : Join OA ,OC & OB

: Proof :

In Δ OBA And Δ OCA

OB = OC (Radii of the same circle)

OA = OA (Common side)

∠OBA = ∠ OCA =90^0 (Radius ⊥ to tangents)

So, Δ OBA ≅ Δ OCA (RHS postulate)

∴ AB = AC

Circles: Tangent theorem from an external point.
Click here/SCAN

PAIR LINEAR EQUATIONS IN TWO VARIABLES

ANNUAL EXAMINATION : JUNE – 2020

One Mark Question

1) In the pair of linear equations $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ then the

(A) Equations have no solution
(B) Equations have unique solution
(C) Equations have three solutions
(D) Equations have infinitely many solutions.

Linear equations- How to answer 1 mark questions Click here/Scan

Answer :- (B) Equations have unique solution

2) Solve : 2x + y = 11

x + y = 8

Answer : 2x + y = 11 ----------(1)

x + y = 8 ----------(2)

⇨ x = 3

[from (1) – (2)]

Let as substitute this value of x in equation (2)

x + y = 8

⇨ 3 + y = 8

⇨ y = 8 – 3

x = 5

Linear equations- How to answer 2 mark questions Click here/Scan

3) Find the solution of the pair of linear equations by graphical method.

Four Mark Question

x + y = 7

3 x – y = 1

x + y = 7 ----------(1)

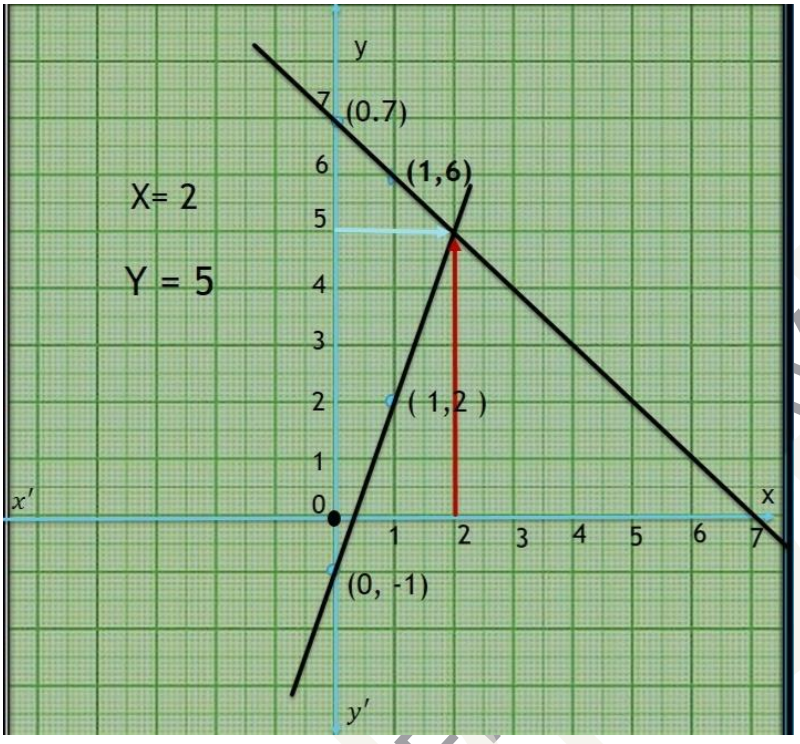
3 x – y = 1----------(2)

Let as consider the equation (1) and (2)

$x + y = 7$, $y = 7 - x$	$3x - y = 1$, $y = 3x - 1$
Let, $x = 0$, $\Longrightarrow$ $y = 7 - 0 = 7$ Let $x = 1$, $\Longrightarrow$ $y = 7 - 1 = 6$ Let $x = 2$, $\Longrightarrow$ $y = 7 - 2 = 5$	Let, $x = 0$, $\Longrightarrow$ $y = 3(0) - 1 = -1$ Let, $x = 1$, $\Longrightarrow$ $y = 3(1) - 1 = 2$ Let, $x = 2$, $\Longrightarrow$ $y = 3(2) - 1 = 5$

x	0	1	2
y	7	6	5

x	0	1	2
y	-1	2	5



To know JUNE-2020 Graph problem solution Click here/Scan

ANNUAL EXAMINATION : SEPTEMBER – 2020 **One Mark Question**

4. In two linear equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$, if $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$, then write the number of solutions these pair of equations have.

Answer : Exactly one solution (Unique solution)

5. Solve the following pair of linear equations: **Two Mark Question**

$2x + 3y = 11$

$2x - 4y = -24$

Answer: $2x + 3y = 11$ ---------- (i)

$2x - 4y = -24$ ---------- (ii)

(i) - (ii) gives,

$$2x + 3y = 11$$
$$2x - 4y = -24$$
$$\underline{(-)\ (+)\qquad (+)}$$
$$7y = 35$$
$$y = \frac{35}{7}$$
$$y = 5$$

Substitute y = 5 in (i)

$$2x + 3y = 11$$
$$2x + 3(5) = 11$$
$$2x + 15 = 11$$
$$2x = 11 - 15$$
$$2x = -4$$
$$x = \frac{-4}{2} \qquad x = -2$$

6. Find the solution of the following pair of linear equations by graphical method. $2x + y = 8$, $x + y = 5$

Four Mark Question

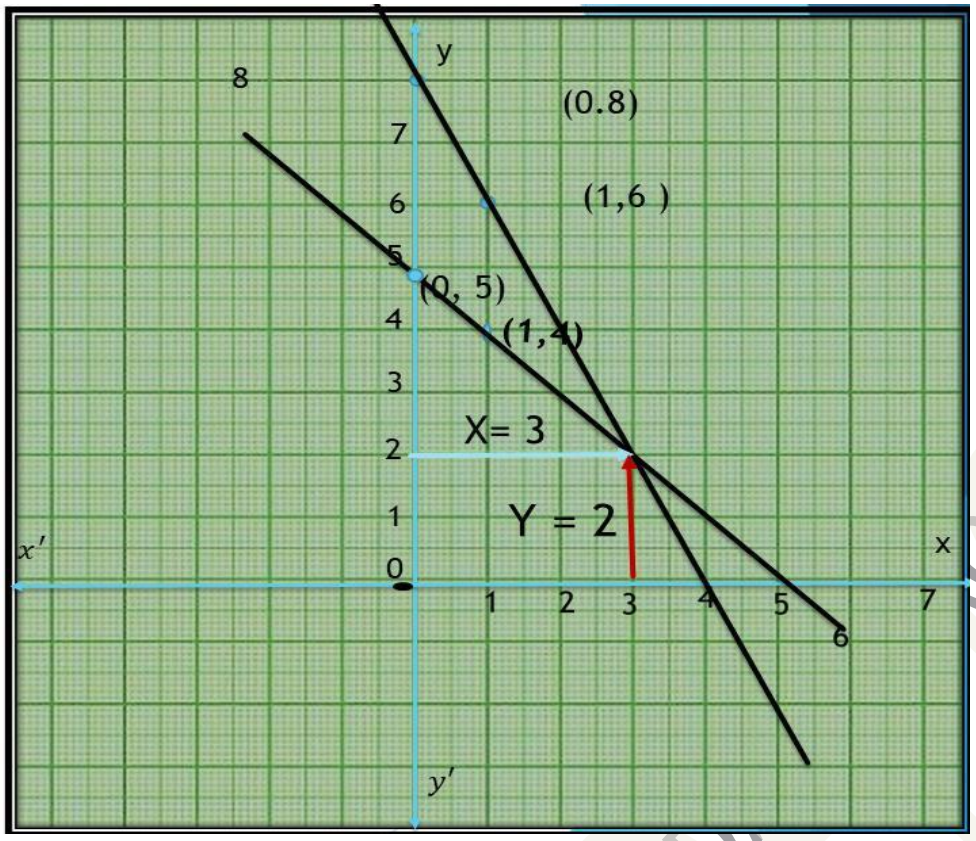
Answer : $2x + y = 8$ ----------(1)

$x + y = 5$----------(2)

$2x + y = 8$, $y = 8 - 2x$	$x + y = 5$, $y = 5 - x$
Let, $x = 0$, $\Rightarrow$ $y = 8 - 2(0) = 8$	Let, $x = 0$, $\Rightarrow$ $y = 5 - 0 = 5$
Let $x = 1$, $\Rightarrow$ $y = 8 - 2(1) = 6$	Let, $x = 1$, $\Rightarrow$ $y = 5 - 1 = 4$
Let $x = 2$, $\Rightarrow$ $y = 8 - 2(2) = 4$	Let, $x = 2$, $\Rightarrow$ $y = 5 - 2 = 3$
Let $x = 3$, $\Rightarrow$ $y = 8 - 2(3) = 2$	Let, $x = 3$, $\Rightarrow$ $y = 5 - 3 = 2$

x	0	1	2	3
y	8	6	4	2

x	0	1	2	3
y	5	4	3	2



To know how to solve SEPTEMBER-2020 Graph problem.
Click here/Scan

KSEEB MODEL QUESTION PAPERS

7. In the pair of linear equations x + y = 9 and x – y = 1,the value of x and y are

One Mark Question

A) 5 and 4 B) 4 and 5 C) 6 and 3 D) 3 and 6

Answer : A) 5 and 4

8. The lines represented by x + 2y – 4 = 0 and 2x + 4y – 12 = 0 are……

One Mark Question

(A) Intersecting lines

(B) Parallel lines

(C) Coincident lines

(D) Perpendicular lines to each other.

Answer :(B) Parallel lines

9. Solve : 10x + 3y = 75 and 6x – 5y = 11

Two Mark Question

Answer : 10x + 3y = 75 ---------- (i)

6x – 5y = 11 ---------- (ii)

Multiply (i) by 5 and multiply (ii) by 3,

$50x + 15y = 375$ ---------- (iii)

$18x - 15y = 33$ ----------(iv)

$50x + 15y = 375$

$\underline{18x - 15y = 33}$

$68x = 408$ [∵ (iii) + (iv) gives]

$x = \frac{408}{68}$

$x = 6$

Substitute x = 6 in (i),

$10x + 3y = 75$

$10(6) + 3y = 75$

$60 + 3y = 75$

$3y = 75 - 60$

$3y = 15$

$y = \frac{15}{3}$

$y = 5$

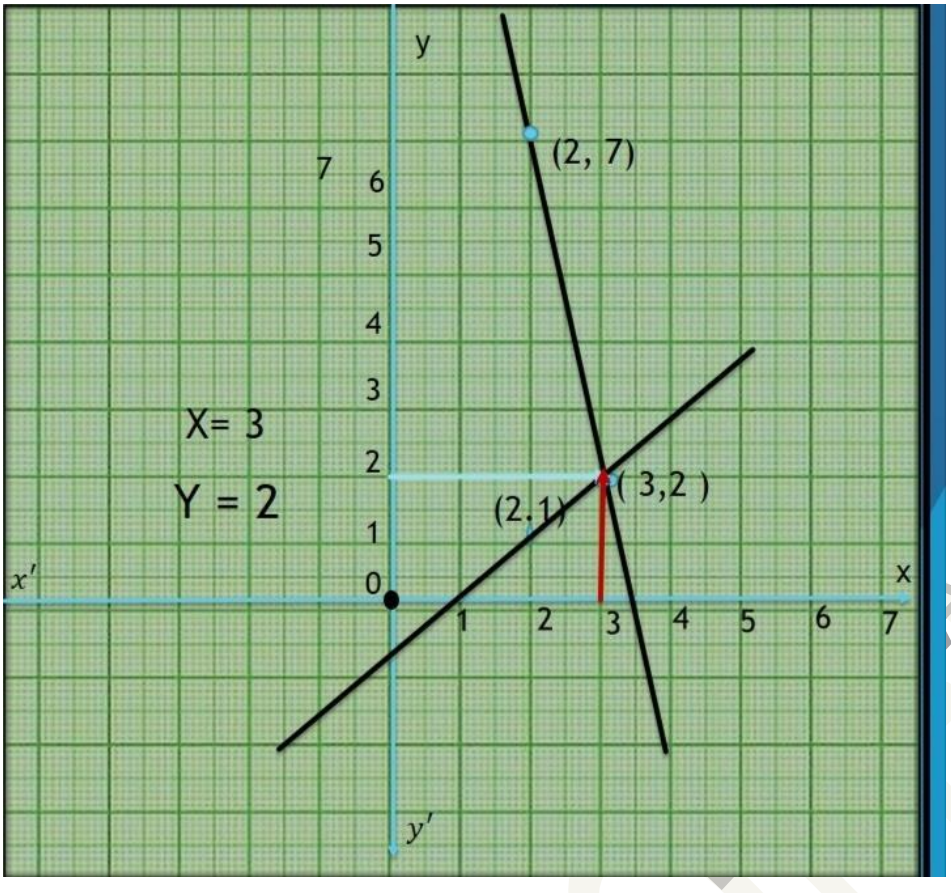
10. Solve graphically : 5x + y = 17 and 2x – 2y = 2.

Answer : $5x + y = 17$

$2x - 2y = 2$

Four Mark Question

$5x + y = 17$, $y = 17 - 5x$	$2x - 2y = 2$, $y = \frac{2x-2}{2}$
Let, $x = 0$, $\Rightarrow y = 17 - 5(0) = 17$ Let $x = 1$, $\Rightarrow y = 17 - 5(1) = 12$ Let $x = 2$, $\Rightarrow y = 17 - 5(2) = 7$ Let $x = 3$, $\Rightarrow y = 17 - 5(3) = 2$	Let, $x = 0$, $\Rightarrow y = \frac{2(0)-2}{2} = -1$ Let, $x = 1$, $\Rightarrow y = \frac{2(1)-2}{2} = 0$ Let, $x = 2$, $\Rightarrow y = \frac{2(2)-2}{2} = 1$ Let, $x = 3$, $\Rightarrow y = \frac{2(3)-2}{2} = 2$
x: 0, 1, 2, 3 y: 17, 12, 7, 2	x: 0, 1, 2, 3 y: -1, 0, 1, 2



ADDITIONAL PROBLEMS

1) Solve the following pair of linear equations in two variables
{ By elimination method }: x + 2y = 9 & 2x – y = 8

Answer : (x + 2y = 9) --------(1)
(2x – y = 8) --------(2)

$\Rightarrow 2x + 4y = 18$ **[Equation (1) multiply by 2]**

$\Rightarrow 2x - y = 8$

(-) (+) (-)

5y = 10 **[By subtracting (2) from (1)]**

∴ y = 2

Let, x + 2y = 9

x + 2(2) = 9 **[By substituting the value y in (1)]**

x + 4 = 9

x = 9 – 4

∴ x = 5

2) $2x + y - 6 = 0$ & $4x - 2y - 4 = 0$

Answer : $2x + y - 6 = 0$ ---------(1)

$4x - 2y - 4 = 0$---------(2)

$2x + y - 6 = 0$

$2x - y - 2 = 0$ **[Equation (2) dividing by 2]**

$4x + 0 - 8 = 0$ **[By adding (1) & (2)]**

$4x = 8$

$\therefore x = 2$

Let, $2x + y - 6 = 0$

$2(2) + y = 6$ **[By substituting the value x in (1)]**

$4 + y = 6$

$y = 6 - 4$

$\therefore y = 2$

3) $2x + 2y = 3$ & $2x - 3y = 8$

Answer : $2x + 2y = 3$----------(1)

$2x - 3y = 8$ ----------(2)

(-) (+) (-)

$5y = -5$ **[By subtracting (2) from (1)]**

$\therefore y = -1$

Let, $2x + 2y = 3$

$2x + 2(-1) = 3$ **[By substituting the value y in (1)]**

$2x - 2 = 3$

$2x = 3 + 2$

$\therefore x = \frac{5}{2}$

4) $2x - 2y = 8$ & $4x - 6y = 8$

Answer : $2x - 2y = 8$--------(1)

$4x - 6y = 8$--------(2)

$2x - 2y = 8$

$2x - 3y = 4$ **[Equation (2) dividing by 2]**

(-) (+) (-)

$\boxed{\therefore y = 4}$ **[By subtracting (2) from (1)]**

Let, $2x - 2y = 8$

$2x - 2(4) = 8$ **[By substituting the value y in (1)]**

$2x - 8 = 8$

$2x = 8 + 8$

$2x = 16$

$\boxed{\therefore x = 8}$

5) $x + 3y = 6$ & $2x - 3y = 12$

Answer : $x + 3y = 6$---------(1)

$2x - 3y = 12$--------(2) **[By adding (1) & (2)]**

$3x = 18$

$\boxed{\therefore x = 6}$

Let, $x + 3y = 6$

$6 + 3y = 6$ **[By substituting the value x in (1)]**

$3y = 6 - 6$

$3y = 0$ $\boxed{\therefore y = 0}$

6) $x + 2y = 3$ & $2x - 6 - 3y = 0$

Answer : $x + 2y = 3$----------(1)

$2x - 6 - 3y = 0$ ----------(2)

$\Rightarrow (x + 2y = 3)2 \Rightarrow 2x + 4y = 6$ **[Equation (1) multiply by 2]**

$\Rightarrow 2x - 3y = 6 \Rightarrow 2x - 3y = 6$

(-) (+) (-)

$7y = 0$ **[By subtracting (2) from (1)]**

$\boxed{\therefore y = 0}$

Let, $x + 2y = 3$

$x + 2(0) = 3$ **[By substituting the value y in (1)]**

$x = 3 - 0$

$\boxed{\therefore x = 3}$

7) x – 7y + 42 = 0 & x – 3y = 6

Answer : x – 7y + 42 = 0 ----------(1)

x – 3y = 6 ----------(2)

$\Rightarrow x - 7y = -42$

$\Rightarrow x - 3y = 6$

(-) (+) (-) **[By subtracting (2) from (1)]**

– 4y = – 48

∴ y = 12

Let, x – 3y = 6

x – 3(12) = 6 **[By substituting the value y in (1)]**

x – 36 = 6

x = 6 + 36

∴ x = 42

8) 2x + 3y = 5 & x + 2y = 3

Answer : 2x + 3y = 5----------(1)

x + 2y = 3----------(2)

$\Rightarrow 2x + 3y = 5$

$\Rightarrow 2x + 4y = 6$ **[Equation (2) multiply by 2]**

(-) (-) (-)

- y = -1 **[By subtracting (2) from (1)]**

∴ y = 1

Let, x + 2y = 3

x + 2(1) = 3 **[By substituting the value y in (1)]**

x + 2 = 3

x = 3 – 2

∴x = 1

9) $x - 3y + 3 = 0$ & $2x + y = 8$

Answer : $x - 3y + 3 = 0$ ----------(1)

$2x + y = 8$ ----------(2)

$x - 3y = -3$

$6x + 3y = 24$

$7y = 21$ **[By adding (1) & (2)]**

$\therefore x = 3$

Let, $3 - 3y = -3$

$-3y = -3 - 3$ **[By substituting the value y in (1)]**

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

$y = 2$

$\therefore y = 2$

10) $y = 2 - x$ & $y = 2 + x$

Answer : $y = 2 - x$

$y = 2 + x$ **[By adding (1) & (2)]**

$2y = 4$

$\therefore y = 2$

Let, $y = 2 + x$ **[By substituting the value y in (2)]**

$2 = 2 + x$

$x = 2 - 2$

$\therefore x = 0$

TRIANGLES

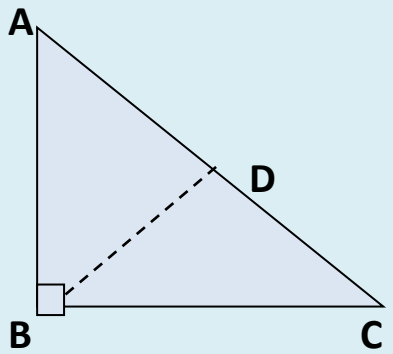
ANNUAL EXAMINATION : JUNE – 2020

ANNUAL EXAMINATION : JUNE – 2019

Four Mark Questions

PYTHAGORAS THEOREM

Statement : In a right angled triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides.



Data : In Δ ABC, ∠ABC = 90^0

To Prove : $AC^2 = AB^2 + BC^2$

Construction : BD ⊥ AC

: Proof :

In Δ ADB and Δ ABC

∠ADB = ∠ABC = 90^0. **(Data and Construction)**

∠BAD = ∠BAC **(Common angle)**

AB = AB **(Common side)**

Δ ADB ~ Δ ABC **(A-A similarity criterian)**

$$\frac{AD}{AB} = \frac{AB}{AC}$$

$AD.\ AC = AB^2$ .....(1)

In Δ BDC and Δ ABC

∠BDC = ∠ABC **(Data and Construction)**

∠DCB = ∠ACB **(Common angle)**

ΔBDC ~ ΔABC **(A - A similarity criterian)**

$$\frac{DC}{BC} = \frac{BC}{AC}$$

DC. AC = BC^2.....(2)

By adding (1) and (2)

AD. AC + DC. AC = $AB^2 + BC^2$

AC(AD + DC) = $AB^2 + BC^2$ [AD + DC = AC]

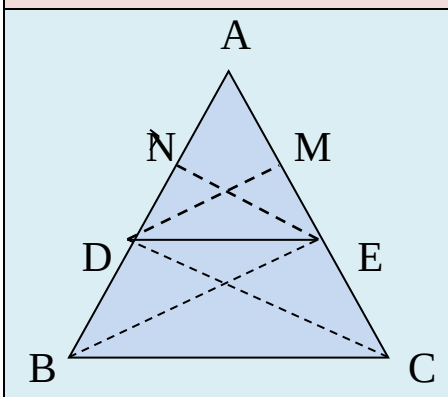
AC. AC = $AB^2 + BC^2$

$AC^2 = AB^2 + BC^2$

How to prove Pythagoras theorem

THALES THEOREM

STATEMENT : If a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, the other two sides are divided in the same ratio.



DATA : In ΔABC, DE ∥ BC.

TO PROVE : $\frac{AD}{DB} = \frac{AE}{EC}$

CONSTRUCTION : To join DC & EB.

Draw EN ⊥ AB, DM ⊥ AC.

: PROOF :

In ΔADE & ΔBDE

$$\frac{Area\ of\ \Delta ADE}{Area\ of\ \Delta BDE} = \frac{\frac{1}{2} X\ AD\ X\ EN}{\frac{1}{2} X\ DB\ X\ EN} = \frac{AD}{DB} \quad .....(1)$$

In ΔADE & ΔCDE

$$\frac{Area\ of\ \Delta ADE}{Area\ of\ \Delta CDE} = \frac{\frac{1}{2} X\ AE\ X\ DM}{\frac{1}{2} X\ EC\ X\ DM} = \frac{AE}{EC} \quad .....(2)$$

In ΔBDE & ΔCDE are on the same base BC

and between the same parallel BC & DE

$\because Area\ of\ \Delta BDE = Area\ of\ \Delta CDE$ **……..(3)**

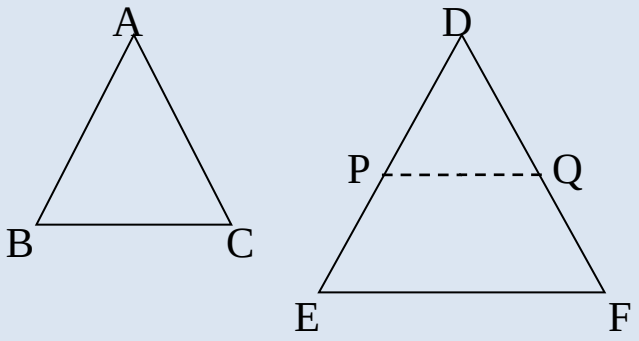
From (1) , (2) & (3) , $\therefore \frac{AD}{DB} = \frac{AE}{EC}$

To know how to prove Thales theorem

A – A CRITERIA THEOREM

ANNUAL EXAMINATION : SEPTEMBER – 2020

STATEMENT : If in two Δ ^{les}, corresponding angles are equal, then their Corresponding sides are in the same proportion, then Δ ^{les} are similar.



Data : In ΔABC & ΔDEF

$\angle A = \angle D, \quad \angle B = \angle E \ \& \quad \angle C = \angle F$

TO PROVE : $\frac{AB}{DE} = \frac{BC}{EF} = \frac{CA}{FD}$

CONSTRUCTION : To draw PQ ∥ EF

DP = AB, BC = PQ & AC = DQ

PROOF : In ΔABC & ΔDPQ

AB = DP & AC = DQ **[∵ Construction]**

$\angle A = \angle D$ **[∵ DATA]**

$\therefore \Delta ABC \cong \Delta DPQ$ **[∵ S.A.S. congruence]**

$\therefore \angle B = \angle P$ **[∵ corresponding angles in similar triangles]**

But, $\angle B = \angle E$ **[∵ DATA]**

$\Rightarrow \angle P = \angle E$

$\therefore PQ \parallel EF$

$\therefore \frac{DP}{DE} = \frac{PQ}{EF} = \frac{QD}{FD}$ **[∵ Thales theorem]**

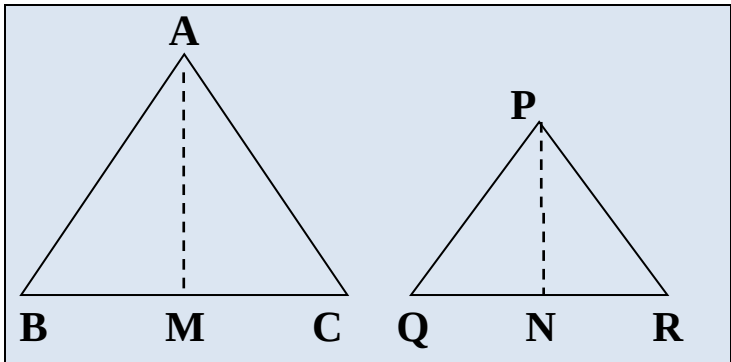
$\therefore \frac{AB}{DE} = \frac{BC}{EF} = \frac{CA}{FD}$

$\because \Delta ABC \sim \Delta DEF$

STATE LEVEL PREPARATORY EXAMINATION – 2019

ANNUAL EXAMINATION : MARCH/APRIL – 2019

AREA OF TRIANGLES THEOREM	
STATEMENT : The ratio of the areas of two similar triangles is equal to the square ofratio of their corresponding sides	
	Data : $\Delta ABC \sim \Delta PQR$ $\frac{AB}{PQ} = \frac{BC}{QR} = \frac{CA}{RP}$



To prove : $\frac{Area\ of\ \Delta ABC}{Area\ of\ \Delta PQR} = \frac{BC^2}{QR^2}$

Construction :

Draw AM ⊥ BC & PN⊥QR.

: PROOF :

ΔAMB & ΔPNQ

$\angle B = \angle Q$ [∵ DATA]

$\angle AMB = \angle PNQ = 90^0$ [∵ Construction]

ΔAMB ~ ΔPNQ [A – A Criteria]

$\Rightarrow \frac{AM}{PN} = \frac{AB}{PQ}$ But, $\frac{BC}{QR} = \frac{AB}{PQ}$

$\therefore \frac{AM}{PN} = \frac{BC}{QR}$

$\therefore \frac{Area of \Delta ABC}{Area of \Delta PQR} = \frac{\frac{1}{2} X\ BC\ X\ \cancel{AM}}{\frac{1}{2} X\ QR\ X\ \cancel{PN}}$

$\therefore \frac{Area of \Delta ABC}{Area of \Delta PQR} = \frac{BC^2}{QR^2}$ $\left[\because \frac{AM}{PN} = \frac{BC}{QR}\right]$

Area of similar triangles theorem.

Click here/SCAN

ADDITIONAL PROBLEMS

1) Sides of two similar triangles in the ratio 4 : 9. Area of triangles are in the ratio is

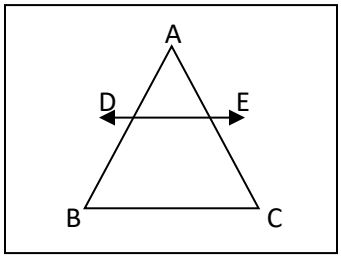
A) 1 : 2 B) 2 : 3 C) 16 : 81 D) 81 : 16

Answer : C) 16 : 81

$\because \frac{\text{Area of triangle} - 1}{\text{Area of triangle} - 2} = \frac{(CORRESPONDINGSIDE - 1)^2}{(CORRESPONDINGSIDE - 2)^2} = \frac{4^2}{9^2} = \frac{16}{81}$

2) In the adjoining figure, If DE || AC, AD = 1cm, DB = 2cm, & AE = 3cm,

then length of EC is



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

Answer : D) 6cm

$\because \frac{AD}{DB} = \frac{AE}{EC}$

$\frac{1}{2} = \frac{3}{EC}$

EC = 6cm

3) The Pythagorian triplet among the following is

A) 3, 6, 5 B) 5, 12, 13 C) 17, 21, 24 D) 9, 12, 14

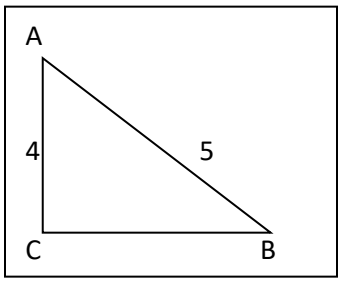
Answer : B) 5, 12, 13

$\because 13^2 = 12^2 + 5^2$

$169 = 144 + 25$

$169 = 169$

4) In right angled ΔABC, ∠C = 90^0. If the length of AB = 5cm, AC = 4cm, then length of BC is



A) 2 B) 3 C) 6 D) 8

Answer : B) 3

By Pythagoras theorem $AB^2 = AC^2 + BC^2$

$BC^2 = AB^2 - AC^2$

$= 5^2 - 4^2$

$BC = \sqrt{25 - 16}$

$= \sqrt{9}$

$= 3$

5) Areas of two similar triangles are in the ratio 81 : 16. Sides of these triangles are in the ratio is

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

Answer : C) 9:4

$$\because \frac{\text{Area of triangle} - 1}{\text{Area of triangle} - 2} = \frac{(CORRESPONDINGSIDE - 1)^2}{(CORRESPONDINGSIDE - 2)^2}$$

$$\frac{(CORRESPONDINGSIDE - 1)}{(CORRESPONDINGSIDE - 2)} = \frac{\sqrt{(\text{Area of triangle} - 1)}}{\sqrt{(\text{Area of triangle} - 2)}} = \frac{\sqrt{81}}{\sqrt{16}} = \frac{9}{4}$$

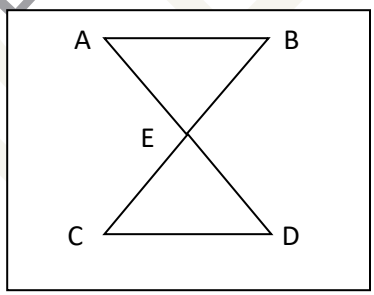
6) In a right angled ΔABC, AB = 10cm, BC = 8cm, AC = 6cm, then the vertex of the right angled triangle is

A) ∠A **B) ∠B** **C) ∠C** **D) ∠*D***

Answer : C) ∠C

∵ According to given data AB is diagonal. So, ∠C vertex of the right angle.

7) In the adjoining figure, the corresponding angles are

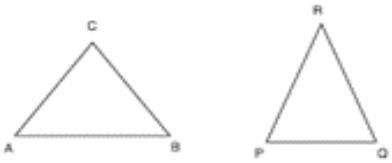


A) ∠A & ∠C **B) ∠A &∠B**

C) ∠D & ∠B **D) ∠A & ∠D**

Answer :D) ∠A &∠D

8) In the adjoining figure, if ΔABC ≅ ΔPQR ,then the ratio of the corresponding sides are



A) $\frac{AB}{PQ} = \frac{AC}{PR} = \frac{BC}{QR}$ **B)** $\frac{AB}{PR} = \frac{AC}{PQ} = \frac{BC}{QR}$

C) $\frac{AC}{PQ} = \frac{AB}{PR} = \frac{BC}{QR}$ **D)** $\frac{BC}{PQ} = \frac{AC}{PR} = \frac{AB}{QR}$

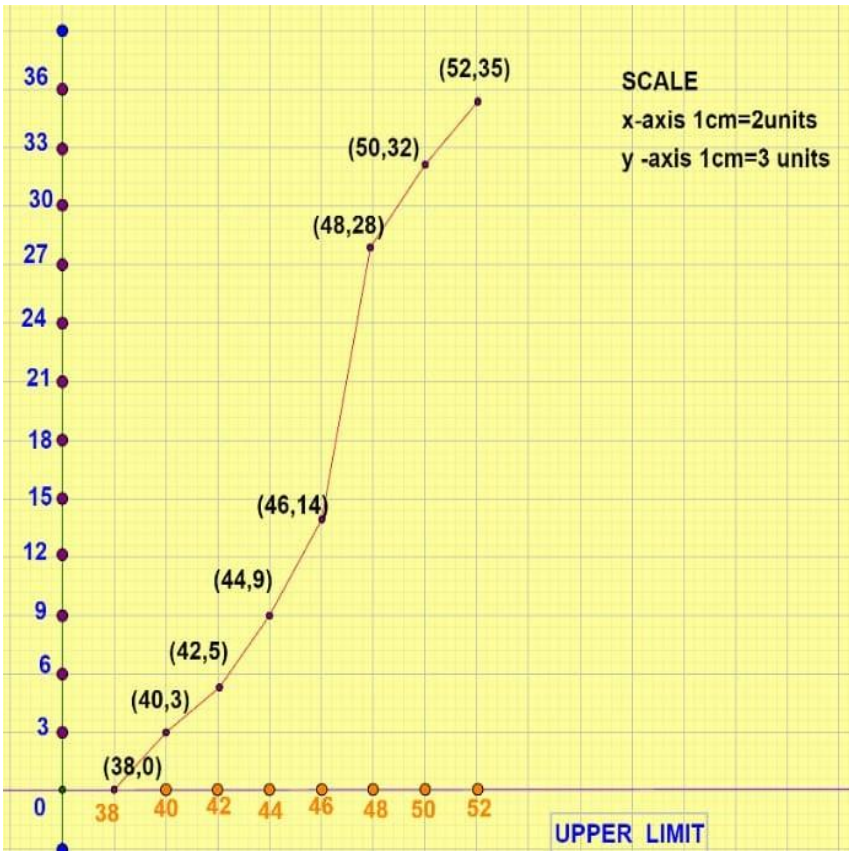
Answer : A) $\frac{AB}{PQ} = \frac{AC}{PR} = \frac{BC}{QR}$

STATISTICS

ANNUAL EXAMINATION : MARCH/APRIL – 2019

Three Mark Questions

1) During medical checkup of 35 students of a class their weight arerecorded as follows. Draw a less than type of ogive for the given data .

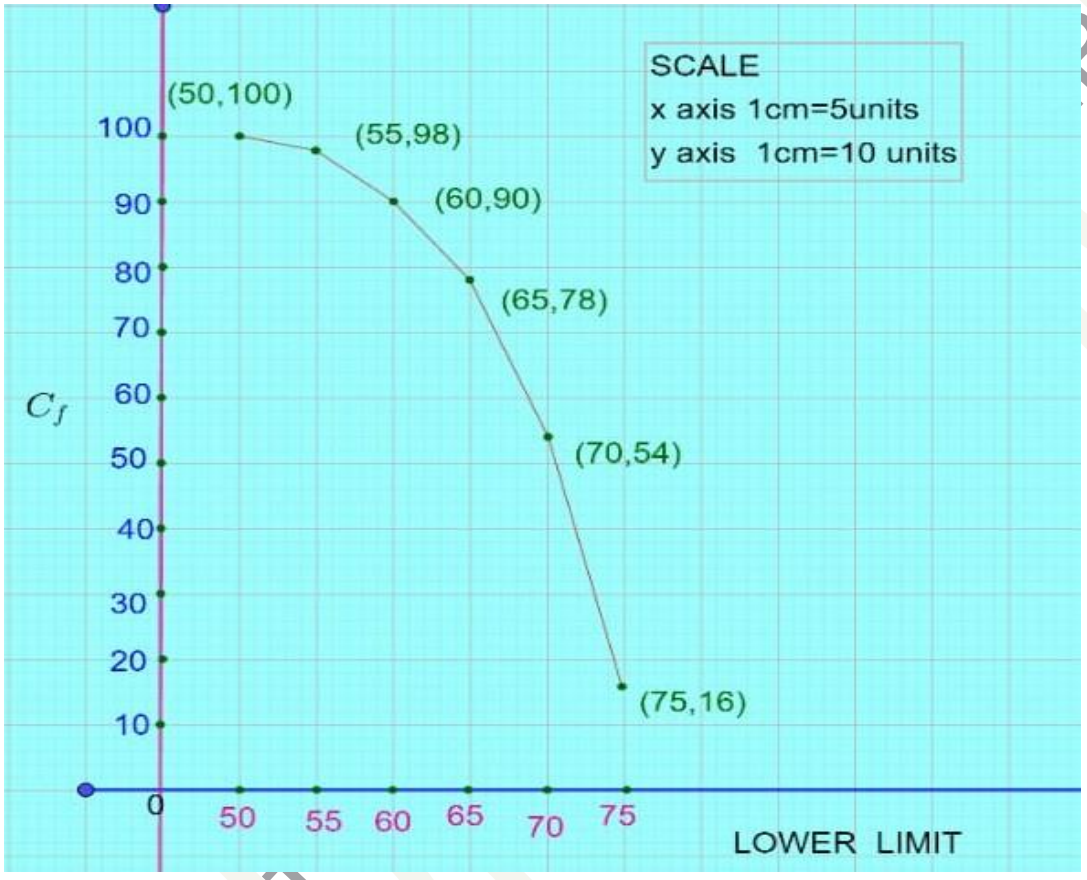


Weight in(kg)	No .of students
Less than 38	0
Less than 40	3
Less than 42	5
Less than 44	9
Less than 46	14
Less than 48	28
Less than 50	32
Less than 52	35

How to solve 3 mark questions of

2) The following table given the production yieper hectare of what of 100 form of a village. Change the distribution to a more than type distribution and draw its ogive.

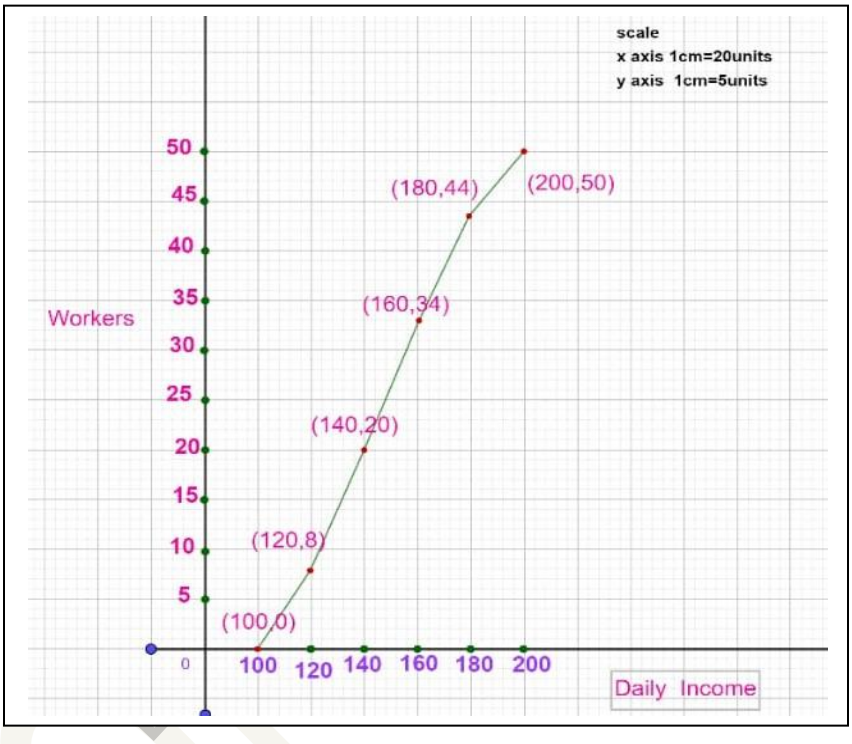
production yield in (kg)	50 – 55	55 – 60	60 – 65	65 – 70	70 – 75	75 – 80
No.of forms	2	8	12	24	38	16



How to solve 3 mark questions of **MORE THAN OGIVE – STATISTICS.Click here**

3)The following table gives the information of daily income of a 50 workers of a factory draw a <u>less than ogive</u> for given data

Daily income	No. of workers
less than 100	0
less than 120	8
less than140	20
less than160	34
less than180	44
less than200	50



4) Find the mean for the following given data.

7.8, 5, 0, 7, 8, 9

$$\frac{\sum x}{N} = \frac{7.8 + 5 + 0 + 7 + 8 + 9}{6} = \frac{36.8}{6} = 6.134$$

ADDITIONAL PROBLEMS

5) Find the mean for the following distribution table.

C - I	f_i	x_i	$f_i x_i$
15 - 25	6	20	120
25 - 35	11	30	330
35 - 45	7	40	280
45 - 55	5	50	250
55 - 65	6	60	360
$\sum f_i = 35$		$\sum f_i x_i = 1340$	

$$\text{Mean} = \overline{X} = \frac{\sum fi\ xi}{\sum fi}$$

$$= \frac{1340}{35}$$

$$= 38.28$$

6. Find the mean for the following distribution table.

C - I	f_i	x_i	$f_i x_i$
0 – 10	7	5	35
10 – 20	10	15	150
20 – 30	23	25	575
30 – 40	51	35	1785
40 – 50	6	45	270
50 – 60	3	55	165
$\sum f_i = 100$		$\sum f_i x_i = 2980$	

$$\text{Mean} = \overline{X} = \frac{\sum fi\, xi}{\sum fi}$$

$$= \frac{2980}{100}$$

$$= 29.8$$

7. Following table gives report of an environment awareness program. Find the mean of trees grown per house.

C - I	f_i	x_i	$f_i x_i$
0 – 2	1	1	1
2 - 4	2	3	6
4 – 6	1	5	5
6 - 8	5	7	35
8 – 10	6	9	54
$\sum f_i = 15$		$\sum f_i x_i = 101$	

$$\text{Mean} = \overline{X} = \frac{\sum fi\, xi}{\sum fi}$$

$$= \frac{101}{15}$$

$$= 6.734$$

How to solve 3 mark questions of MEAN –STATISTICS.

Click here /scan

QUADRATIC EQUATIONS

KSEEB MODEL QUESTION PAPERS

One Mark Questions

1) If the discriminant of the quadratic equation is $b^2 - 4ac = 0$ then, what is the nature of roots?

Answer : Two equal real roots

2) Write the discriminant of the quadratic equation $px^2 + qx - r = 0$

Answer : $\triangle = b^2 - 4ac$

$= (q)^2 - 4(p)(-r)$

$= q^2 + 4pr \quad [\, a = p,\ b = q,\ c = -r \,]$

3) Write the discriminant of the quadratic equation $ax^2 + bx + c = 0$

Answer : $\triangle = b^2 - 4ac$

4) Find the roots of the quadratic equation $x^2 + 7x + 12 = 0$

Two Mark Questions

Answer : $x^2 + 7x + 12 = 0$

$x^2 + 4x + 3x + 12 = 0$

$x(x + 4) + 3(x + 4) = 0$

$(x + 4)(x + 3) = 0$

$(x + 4) = 0$ or $(x + 3) = 0$

$x = -4$ or $x = -3$

5) $3x^2 - 5x + 2 = 0$. Find the roots using the formula.

Answer : $a = 3,\ b = -5,\ c = 2$

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

$$= \frac{-(-5) \pm \sqrt{(-5)^2 - 4(3)(2)}}{2(3)}$$

$$= \frac{5 \pm \sqrt{25 - 24}}{6}$$

$$= \frac{5 \pm \sqrt{1}}{6}$$

Quadratic eqns

1 marks questions

$$= \frac{5 \pm 1}{6}$$

$$x = \frac{5+1}{6} = \frac{6}{6} = 1 \qquad \text{or} \qquad x = \frac{5-1}{6} = \frac{4}{6} = \frac{2}{3}$$

The roots are [1, $\frac{2}{3}$]

6) Find the roots of the equation $6x^2 + 7x - 10 = 0$

Answer : a = 6, b = 7, c = – 10

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

$$= \frac{-(7) \pm \sqrt{(7)^2 - 4(6)(-10)}}{2(6)}$$

$$= \frac{-7 \pm \sqrt{49 + 240}}{12}$$

$$= \frac{-7 \pm \sqrt{289}}{12}$$

$$= \frac{-7 \pm 17}{12}$$

$$x = \frac{-7-17}{12} = \frac{-24}{12} = -2 \qquad \text{or} \qquad x = \frac{-7+17}{12} = \frac{10}{12} = \frac{5}{6}$$

The roots are [-2, $\frac{5}{6}$]

7) Solve using the formula $4x^2 - 2x - 1 = 0$

Answer : a = 4, b = –2, c = – 1

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

$$= \frac{-(-2) \pm \sqrt{(-2)^2 - 4\,(4)(-1)}}{2(4)}$$

$$= \frac{2 \pm \sqrt{4 + 16}}{8}$$

$$= \frac{2 \pm \sqrt{20}}{8}$$

$$= \frac{2 \pm 2\sqrt{5}}{8}$$

QUADRATIC EQNS
2 marks questions

$$= \frac{1 \pm \sqrt{5}}{4}$$

$$x = \frac{1 + \sqrt{5}}{4} \quad \text{or} \quad x = \frac{1 - \sqrt{5}}{4}$$

The roots are $\left[\frac{1 + \sqrt{5}}{4}, \frac{1 - \sqrt{5}}{4} \right]$

ANNUAL EXAMINATION : MARCH/APRIL – 2019

8)Find the discriminant value of this quadratic equation $2x^2 - 4x + 3 = 0$

Answer : $\triangle = b^2 - 4ac$

$a = 2, \quad b = -4, \quad c = 3$

$\triangle = (-4)^2 - 4(2)(3)$

$= 16 - 24$

$= -8 < 0$ **No real root**

ANNUAL EXAMINATION : JUNE – 2019

9) Solve the equation $x^2 - 3x - 10 = 0$ by using formula.

Answer : $a = 1, \quad b = -3, \quad c = -10$

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

$$= \frac{-(-3) \pm \sqrt{(-3)^2 - 4(1)(-10)}}{2(1)}$$

$$= \frac{3 \pm \sqrt{9 + 40}}{2}$$

$$= \frac{3 \pm \sqrt{49}}{2} = \frac{3 \pm 7}{2}$$

$$x = \frac{3 + 7}{2} = \frac{10}{2} = 5 \quad \text{or} \quad x = \frac{3 - 7}{2} = \frac{-4}{2} = -2$$

The roots are [5, -2]

ANNUAL EXAMINATION : JUNE – 2020

10) $\frac{x+1}{2} = \frac{1}{x}$ **Write it in standard form.**

Answer : $x(x + 1) = 2 \times 1$

$x^2 + x = 2$

$x^2 + x - 2 = 0$

11) Find the discriminant of the equation $2x^2 - 5x + 3 = 0$ and hence write the

nature of roots.

Answer : $2x^2 - 5x + 3 = 0$

$a = 2, b = -5, c = 3$

$\Delta = b^2 - 4ac$

$\Delta = (-5)^2 - 4(2)(3)$

$\Delta = 25 - 24$

$\Delta = 1 > 0$ Two distinct real roots

ANNUAL EXAMINATION : SEPTEMBER – 2020

12) Find the value of the discriminant of the quadratic equation $2x^2 - 5x - 1 = 0$ and hence write the nature of roots.

Answer : $2x^2 - 5x - 1 = 0$

$a = 2, b = -5, c = -1$

$\Delta = b^2 - 4ac$

$\Delta = (-5)^2 - 4(2)(-1)$

$\Delta = 25 + 8$

$\Delta = 33 > 0$ Two distinct real roots

ADDITIONAL PROBLEMS

1) In a quadratic equation, if $b^2 - 4ac = 0$ then the nature of roots are

A) Real and distinct B) Roots are real and equal

C) No real roots D) Roots are imaginary

Answer : B) Roots are real and equal

2) If the discriminant of a quadratic equation $kx(x - 2) + 6 = 0$ is equal, then the value of k is

A) 2 B) 0 C) 6 D) 8

Answer : C) 6

Given, $kx(x - 2) + 6 = 0$

$kx^2 - 2kx + 6 = 0$

$\therefore a = k, b = -2k \ \& \ c = 6$

Discriminant of a quadratic equation is 0. So, $\Delta = b^2 - 4ac = 0$

$(-2k)^2 - 4(k)(6) = 0$

$4k^2 - 24k = 0$

$4k(k - 6) = 0$

$4k = 0 \ \& \ k - 6 = 0$

Then, $k \neq 0$ & $k = 6$

3) "Length of a rectangular garden is twice of its breadth and its area is 800 cm^2." The algebraic expression for this statement is

A) $x(2x) = 800$ **B) $x(x + 2) = 800$**

C) $x(x - 2x) = 800$ **D) $x(x + 2x) = 800$**

Answer : A) $x(2x) = 800$ **[Area of a rectangle is A = length x breath]**

4) Discriminant of $2x^2 - 3x + 5 = 0$ is

A) 29 **B) 19** **C) 49** **D) -31**

Answer : D) –31

Discriminent of a quadratic equation is $\Delta = b^2 - 4ac$

Here $b = -3$, $a = 2$ & $c = 5$ then, $\Delta = (-3)^2 - 4(2)(5)$

$$\Delta = 9 - 40$$

$$\Delta = -31$$

5) General form of $x^2 - 2x = (-2)(3 - x)$ is

A) $x^2 + 4x + 6 = 0$ **B) $x^2 - 4x + 6 = 0$**

C) $x^2 - 4x - 6 = 0$ **D) $x^2 + 4x - 6 = 0$**

Answer : B) $x^2 - 4x + 6 = 0$

$$x^2 - 2x = (-2)(3 - x)$$

$$x^2 - 2x = -6 + 2x$$

$$x^2 - 2x + 6 - 2x = 0$$

$$x^2 - 4x + 6 = 0$$

6) "Sum of the square of two consecutive odd positive integers is 290." The algebraic expression for this statement is

A) $x^2 + (x + 1)^2 = 290$ **B) $x^2 + (x - 1)^2 = 290$**

C) $x^2 + (x + 2)^2 = 290$ **D) $x^2 + (x - 2)^2 = 290$**

Answer : C) $x^2 + (x + 2)^2 = 290$

I. Solve the below quadratic equations by using the formula

1) $x^2 - 3x - 4 = 0$ $a = 1,\ b = -3,\ c = -4$ $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$ $= \frac{-(-3) \pm \sqrt{(-3)^2-4(1)(-4)}}{2(1)}$ $= \frac{3 \pm \sqrt{9+16}}{2}$ $= \frac{3 \pm \sqrt{25}}{2}$ $= \frac{3 \pm 5}{2}$ $x = \frac{3+5}{2} = \frac{8}{2} = 4$ or $x = \frac{3-5}{2} = \frac{-2}{2} = -1$ The roots are [4, -1]	2) $x^2 + 4x = 5$ $a = 1,\ b = 4,\ c = -5$ $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$ $= \frac{-(4) \pm \sqrt{(4)^2-4(1)(-5)}}{2(1)}$ $= \frac{-4 \pm \sqrt{16+20}}{2}$ $= \frac{-4 \pm \sqrt{36}}{2} = \frac{-1 \pm 6}{2}$ $x = \frac{-4+6}{2} = \frac{2}{2} = 1$ or $x = \frac{-4-6}{2} = \frac{-10}{2}$ The roots are [1, -5]	3) $2x^2 - 7x + 3 = 0$ $a = 2,\ b = -7,\ c = 3$ $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$ $= \frac{-(-7) \pm \sqrt{(-7)^2-4(2)(3)}}{2(2)}$ $= \frac{7 \pm \sqrt{49-24}}{4}$ $= \frac{7 \pm \sqrt{25}}{4} = \frac{7 \pm 5}{4}$ $x = \frac{7+5}{4} = \frac{12}{4} = 3$ or $x = \frac{7-5}{4} = \frac{2}{4} = \frac{1}{2}$ The roots are [3, $\frac{1}{2}$]
4) $x^2 - 2x = 2$ $a = 1,\ b = -2,\ c = -2$ $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$ $= \frac{-(-2) \pm \sqrt{(-2)^2-4(1)(-2)}}{2(1)}$ $= \frac{2 \pm \sqrt{4+8}}{2} = \frac{2 \pm \sqrt{12}}{2}$ $x = \frac{2+4\sqrt{3}}{2} = 1 + 2\sqrt{3}$ or $= \frac{2-4\sqrt{3}}{2} = 1 - 2\sqrt{3}$ The roots are [$1 + 2\sqrt{3},\ 1 - 2\sqrt{3}$]	5) $x^2 + 2x - 143 = 0$ $a = 1,\ b = 2,\ c = -143$ $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a} =$ $\frac{-(2) \pm \sqrt{(2)^2-4(1)(-143)}}{2(1)}$ $= \frac{-2 \pm \sqrt{4+572}}{2}$ $= \frac{-2 \pm \sqrt{576}}{2} = \frac{-2 \pm 24}{2}$ $x = \frac{-2+24}{2} = \frac{22}{2} = 11$ or $x = \frac{-2-24}{2} = \frac{-26}{2} = -13$ The roots are [11, -13]	6) $x^2 - 3x = 10$ $a = 1,\ b = -3,\ c = -10$ $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$ $= \frac{-(-3) \pm \sqrt{(-3)^2-4(1)(-10)}}{2(1)}$ $= \frac{3 \pm \sqrt{9+40}}{2}$ $= \frac{3 \pm \sqrt{49}}{2} = \frac{3 \pm 7}{2}$ $x = \frac{3+7}{2} = \frac{10}{2} = 5$ or $x = \frac{3-7}{2} = \frac{-4}{2} = -2$ The roots are [5, -2]

7) $2x^2 + x - 6 = 0$

$a = 2,\ b = 1,\ c = -6$

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

$$= \frac{-(1) \pm \sqrt{(1)^2 - 4(2)(-6)}}{2(2)}$$

$$= \frac{-1 \pm \sqrt{1 + 48}}{4}$$

$$= \frac{-1 \pm \sqrt{49}}{4}$$

$$= \frac{-1 \pm 7}{4}$$

$$x = \frac{-1 + 7}{4} = \frac{6}{4} = \frac{3}{2} \quad \text{or}$$

$$x = \frac{-1 - 7}{4} = \frac{-8}{2} = -4$$

The roots are $[\ \frac{3}{2}, -4\ ]$

8) $2x^2 - 5x = -3$

$a = 2,\ b = -5,\ c = 3$

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

$$= \frac{-(-5) \pm \sqrt{(-5)^2 - 4(2)(3)}}{2(2)}$$

$$= \frac{5 \pm \sqrt{25 - 24}}{4}$$

$$= \frac{5 \pm \sqrt{1}}{4}$$

$$= \frac{5 \pm 1}{4}$$

$$x = \frac{5 + 1}{4} = \frac{6}{4} = \frac{3}{2} \quad \text{or}$$

$$x = \frac{5 - 1}{2} = \frac{4}{2} = 2$$

The roots are $[\ \frac{3}{2}, 2\ ]$

9) $x^2 + 48x = 324$

$a = 1,\ b = 48,\ c = -324$

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

$$= \frac{-(48) \pm \sqrt{(48)^2 - 4(1)(-324)}}{2(1)}$$

$$= \frac{-48 \pm \sqrt{2304 + 1296}}{2}$$

$$= \frac{-48 \pm \sqrt{3600}}{2}$$

$$= \frac{-48 \pm 60}{2}$$

$$x = \frac{-48 + 60}{2} = \frac{12}{2} = 6 \quad \text{or}$$

$$x = \frac{-48 - 60}{2} = \frac{-108}{2} = -54$$

The roots are $[\ 6, -54\ ]$

10) $3x^2 - 5x + 2 = 0$

$a = 3,\ b = -5,\ c = 2$

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

$$= \frac{-(-5) \pm \sqrt{(-5)^2 - 4(3)(2)}}{2(3)}$$

$$= \frac{5 \pm \sqrt{25 - 24}}{6}$$

$$= \frac{5 \pm \sqrt{1}}{4}$$

$$= \frac{5 \pm 1}{4}$$

$$x = \frac{5 + 1}{4} = \frac{6}{4} = \frac{3}{2} \quad \text{or}$$

$$x = \frac{5 - 1}{4} = \frac{4}{4} = 1$$

The roots are $[\ \frac{3}{2}, 1\ ]$

COORDINATE GEOMETRY

ANNUAL EXAMINATION : JUNE – 2020

One Mark Question

1) Find the coordinates of the mid-point of the line joining the points (x_1, y_1) and (x_2, y_2).

Answer : $P(x, y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

Two Mark Question

2) Find the coordinates of the point which divides the line joining the points (1, 6) and (4, 3) in the ratio 1 : 2.

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

$P(x, y) = \left(\frac{1x4 + 2x1}{1 + 2}, \frac{1x3 + 2x6}{1 + 2}\right)$

$P(x, y) = \left(\frac{4 + 2}{3}, \frac{3 + 12}{3}\right)$

$P(x, y) = \left(\frac{6}{3}, \frac{15}{3}\right)$

$P(x, y) = (2, 5)$

How to answer 1 MARK QUESTIONS IN CO-ORDINATE GEOMETRY

CLICK HERE/SCAN

3) Find the distance between the points (-5, 7) and (-1, 3).

Answer :

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

$d = \sqrt{(-1 - (-5))^2 + (3 - 7)^2}$

$d = \sqrt{(-1 + 5)^2 + (3 - 7)^2}$

$d = \sqrt{(4)^2 + (-4)^2}$

$d = \sqrt{16 + 16}$

$d = \sqrt{32}$

$d = \sqrt{16 \text{ x } 2}$

$d = 4\sqrt{2}$ units

Three Mark Question

4) The points A (1, 1), B (3, 2) and C (5, 3) cannot be the vertices of the triangle ABC. Justify.

Answer:

$AB = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ $AB = \sqrt{(3 - 1)^2 + (2 - 1)^2}$ $AB = \sqrt{(2)^2 + (1)^2}$ $AB = \sqrt{4 + 1}$ $AB = \sqrt{5}$ units	$BC = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ $BC = \sqrt{(5 - 3)^2 + (3 - 2)^2}$ $BC = \sqrt{(2)^2 + (1)^2}$ $BC = \sqrt{4 + 1}$ $BC = \sqrt{5}$ units	$AC = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ $AC = \sqrt{(5 - 1)^2 + (3 - 1)^2}$ $AC = \sqrt{(4)^2 + (2)^2}$ $AC = \sqrt{16 + 4}$ $AC = \sqrt{20}$ $AC = \sqrt{4X5}$ $AC = 2\sqrt{5}$ units
AC = AB + BC → A, B and C are collinear. **These points can't be the vertices of triangle ABC.**		

ANNUAL EXAMINATION : SEPTEMBER – 2020

5) Find the co – ordinates of the mid – point of the line joining the points (2, 3) and (4, 7)

Two Mark Question

Answer: Co – ordinates of the mid-point,

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

$$P(x,y) = \left(\frac{2+4}{2}, \frac{3+7}{2}\right)$$

$$P(x,y) = \left(\frac{6}{2}, \frac{10}{2}\right)$$

$$P(x, y) = (3, 5)$$

CO-ORDINATE GEOMETRY 2 MARK QUESTIONS CLICK HERE/SCAN

KSEEB MODEL QUESTION PAPERS

One Mark Questions

6) The distance between the point (4, 3) and in the origin is

A) 7 units B) 25 units C) 5 units D) 6 units

Answer : C) 5 units

7) Find the co – ordinates of the mid – point of the line joining the points (6, 2) and (4, 4).

Two Mark Questions

Answer : Co-ordinates of the mid – point,

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

$$P(x,y) = \left(\frac{6+4}{2}, \frac{2+4}{2}\right)$$

$$P(x,y) = \left(\frac{10}{2}, \frac{6}{2}\right)$$

$$P(x, y) = (5, 3)$$

8) Find the distance between the points A(8, -3) and B(0, 9) by using distance formula.

Answer :

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

$$d = \sqrt{(0-8)^2 + (9-(-3))^2}$$

$$d = \sqrt{(0-8)^2 + (9+3)^2}$$

$$d = \sqrt{(-8)^2 + (12)^2}$$

$$d = \sqrt{64 + 144} \qquad d = \sqrt{208} \text{ units}$$

ADDITIONAL PROBLEMS

1) Write the coordinates of the origin.

Answer : The coordinates of the origin is (0, 0)

2) Find the distance between the points (4, -3) and origin.

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

$$d = \sqrt{(4)^2 + (-3)^2}$$

$$d = \sqrt{16 + 9}$$

$$d = \sqrt{25}$$

3) Find the distance between the points (2, 3) and (6, -8).

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

$(x_1, y_1) = (2, 3)$

$(x_2, y_2) = (6, -8)$

$$d = \sqrt{(6 - 2)^2 + (-8 - 3)^2}$$

$$d = \sqrt{(4)^2 + (-11)^2}$$

$$d = \sqrt{16 + 121}$$

$$d = \sqrt{137}$$

4) Find the distance between the following coordinate points :

1) (2, 3) & (6, 6)	2) (2, 5) & (-3, -7)
$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$	$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
$d = \sqrt{(6 - 2)^2 + (6 - 3)^2}$	$d = \sqrt{(-3 - 2)^2 + (-7 - 5)^2}$
$d = \sqrt{(4)^2 + (3)^2}$	$d = \sqrt{(-5)^2 + (-12)^2}$
$d = \sqrt{16 + 9}$	$d = \sqrt{25 + 144}$
$d = \sqrt{25}$	$d = \sqrt{169}$
$d = 5$	$d = 13$

3) (8, 3) & (8, -7) $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ $d = \sqrt{(8 - 8)^2 + (-7 - 3)^2}$ $d = \sqrt{(0)^2 + (-10)^2}$ $d = \sqrt{0 + 100}$ $d = \sqrt{100} = 10$	**4) (2, 8) & (6, 8)** $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ $d = \sqrt{(6 - 2)^2 + (8 - 8)^2}$ $d = \sqrt{(4)^2 + (0)^2}$ $d = \sqrt{16 + 0}$ $d = \sqrt{16} = 4$
5) (3, 4) & (0, 0) $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ $d = \sqrt{(0 - 3)^2 + (0 - 4)^2}$ $d = \sqrt{(-3)^2 + (-4)^2}$ $d = \sqrt{9 + 16}$ $d = \sqrt{25}$ $d = 5$	**6) (6, 9) & (18, 18)** $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ $d = \sqrt{(18 - 6)^2 + (18 - 9)^2}$ $d = \sqrt{(12)^2 + (9)^2}$ $d = \sqrt{144 + 81}$ $d = \sqrt{225}$ $d = 15$
7) (5, 3) & (-13, 7) $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ $d = \sqrt{(-13 - 5)^2 + (7 - 3)^2}$ $d = \sqrt{(-18)^2 + (4)^2}$ $d = \sqrt{324 + 16}$ $d = \sqrt{340}$ $d = 2\sqrt{85}$	**8) (4, 6) & (12, 12)** $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ $d = \sqrt{(12 - 4)^2 + (12 - 6)^2}$ $d = \sqrt{(8)^2 + (6)^2}$ $d = \sqrt{64 + 36}$ $d = \sqrt{100}$ $d = 10$
9) (-2, -5) & (-2, 9) $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ $d = \sqrt{(-2 - (-2))^2 + (9 - (-5))^2}$ $d = \sqrt{(-2 + 2)^2 + (9 + 5)^2}$ $d = \sqrt{(0)^2 + (14)^2}$ $d = 14$	**10) (-3, 5) & (0, 1)** $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ $d = \sqrt{(0 - (-3))^2 + (1 - 5)^2}$ $d = \sqrt{(3)^2 + (-4)^2}$ $d = \sqrt{9 + 16}$ $d = \sqrt{25} = 5$

FORMULAS

1) Distance between origin to a point P(x, y)

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

2) Distance between the point P(x_1, y_1) and Q (x_2, y_2)

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

3) Section formula

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

4) Mid point formula

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

5) Area of triangle $= \frac{1}{2}[\, x_1(y_2 - y_3) + x_2 (y_3 - y_1) + x_3 (y_1 - y_2) \,]$

SURFACE AREA AND VOLUMES

One Mark Questions

How to solve one mark question IN THE CHAPTER**surface Area and volume**

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

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

Answer : C) 220 cm^3

Volume of cylinder = $(\pi r)^2$ X h

= 22 x 10

= 220 cm^3

2) Write the formula to find the total surface area of the cone whose radius is 'r' units and slant height is 'l' units.

Answer : πr (l + r) units.

Area of the circular base = $(\pi r)^2$ = 22 cm^2

h = 10 cm

Formulas -**surface Area and volume**

Click here /scan

ANNUAL EXAMINATION : SEPTEMBER – 2020

3) The base radius and height of a right circular cylinder and a right circular cone are equal and , if the volume of the cylinder is 360 cm^3 , then the volume of cone is----------

A)120 cm^3 B)180 cm^3 C)90 cm^3 D)360 cm^3

Answer : A)120 cm^3

Volume right circular cone = $\frac{1}{3}$ Volume of the cylinder

= [$\frac{1}{3}$] 360

= 120 cm^3

4) The surface area of a sphere of radius 7cm is----------

A) 154cm^2 B) 616 cm^3 C) 616cm^2 D) 308cm^2

Answer : C) 616cm^2

Surface area of a sphere, A = 4πr^2

r = 7cm

= 4 (3.142) (7 x 7)

= 12.568 x 49

= 615.832

= 616cm^2

KSEEB MODEL QUESTION PAPERS

5) The formula used to find the curved surface area of a cone of radius (r), height (h), slant height (ℓ) is

A) πrℓ B) 2π(r + ℓ) C) 2πr (r + h) D) πr^{2}h

Answer : A) π r ℓ

6) A solid piece of iron is in the form of a cuboid of dimensions 10cm x 5cm x 2cm. Find its volume.

Answer : Volume of a cuboid = V = ℓbh

ℓ = 10 cm
b =5cm
h=2 cm

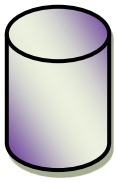
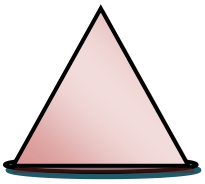
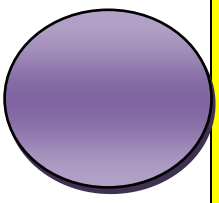
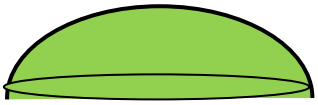
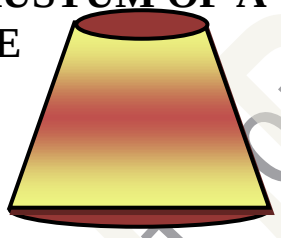
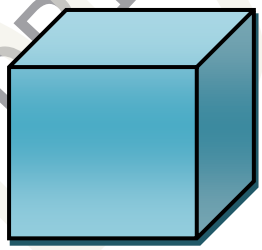
= 10 x 5 x 2

= 50 x 2

= 100 cm^3

7) Write the formula to find the volume of sphere.

Answer :Volume of sphere = $\frac{4}{3}\pi r^3$

SOLIDS	CSA[LSA]	TSA	VOLUME
1)CYLINDER 	$2\pi rh$	$2\pi r\ (h + r)$	$\pi r^2 h$
2) CONE 	πrl	$\pi r\ (l + r)$	$\frac{1}{3}\pi r^2 h$
3) SPHERE 	$4\pi r^2$	$4\pi r^2$	$\frac{4}{3}\pi r^3$
4) HEMISPHERE 	$2\pi r^2$	$2\pi r^2$	$\frac{2}{3}\pi r^3$
5) FRUSTUM OF A CONE 	$\pi(r_1 + r_2)l$	$\pi(r_1 + r_2)l + \pi r_1^2 + \pi r_2^2$ $l = \sqrt{h^2 + (r_1 - r_2)^2}$	$\frac{1}{3}\pi h\ (r_1^2 + r_2^2 + r_1 r_2)$
6) CUBE 	$4\ [a^2]$	$6\ [a^2]$	a^3
7) CUBOID 	$2h[l + b]$	$2\ [lb + bh + hl]$	Lbh

ARITHMETIC PROGRESSION

ANNUAL EXAMINATION : MARCH/APRIL – 2019

1) If the nth term of an arithmetic progression is $a_n = 24 - 3n$, then the 2nd term is

One Mark Question

Answer : $a_n = 24 - 3n$

$a_2 = 24 - 3(2)$

$a_2 = 24 - 6$

$a_2 = 18$

2) Find the sum of first 20 terms of arithmetic series 2 + 7 + 12 + …….. using suitable formula.

Two Mark Question

Answer : 2 + 7 + 12 + ……

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

$S_{20} = \frac{20}{2}[2(2) + (20-1)5]$

$S_{20} = 10[4 + (19)5]$

$S_{20} = 10[4 + 95]$

$S_{20} = 10[99]$

$S_{20} = 990$

$n = 20$

$a = 2$

$d = a_2 - a_1 = 7 - 2 = 5$

$S_{20} = ?$

Arithmetic progression 1 mark questions from previous year papers CLICK HERE/ SCAN

ANNUAL EXAMINATION : JUNE – 2019

3) If the nth term of an arithmetic progression is 5n + 3, then 3rd term of the arithmetic progression is----------

Answer : $a_n = 5n + 3$

$a_n = 5(3) + 3$

$a_n = 15 + 3$

$a_n = 18$

4) Write the formula to find the sum of the first n terms of an arithmetic progression, whose first term is a and the last term is a_n .

Answer : $S_n = \frac{n}{2}[\, a + a_n \,]$

ANNUAL EXAMINATION : JUNE – 2020

5) In an arithmetic progression, if $a_n = 2n + 1$, then the common difference of the given progression is----------

One Mark Question

Answer :

$a_n = 2n + 1$	$a_n = 2n + 1$
$a_1 = 2(1) + 1$	$a_2 = 2(2) + 1$
$a_1 = 2 + 1$	$a_2 = 4 + 1$
$a_1 = 3$	$a_2 = 5$

3, 5, ……

$d = a_2 - a_1 = 5 - 3 = 2$

6) Find the sum of 5 + 8 + 11 + ……. to 10 terms using the formula.

Two Mark Question

Answer : 5 + 8 + 11 + …….. up to 10 terms

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

$S_{10} = \frac{10}{2}[\, 2(5) + (10 - 1)\, 3 \,]$

$S_{10} = 5\,[\, 10 + (9)\, 3 \,]$

$S_{10} = 5\,[\, 10 + 27 \,]$

$S_{10} = 5\,[\, 37 \,]$

$S_{10} = 185$

$n = 10$

$a = 5$

$d = a_2 - a_1 = 8 - 5 = 3$

$S_{10} = ?$

ANNUAL EXAMINATION : SEPTEMBER – 2020

7) If the nth term of an arithmetic progression is $a_n = 3n - 2$, then its 9th term is

One Mark Question

Answer : $a_n = 3n - 2$

$a_9 = 3(9) - 2$

$a_9 = 27 - 2$

$a_9 = 25$

8) Find the sum of first 20 terms of arithmetic series 5 + 10 + 15 + ……. using suitable formula.

Two Mark Question

Answer : 5 + 10 + 15 + …….

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

$S_{20} = \frac{20}{2}[2(5) + (20-1)5]$

$S_{20} = 10[10 + (19)5]$

$S_{20} = 10[10 + 95]$

$S_{20} = 10[105]$

$S_{20} = 1050$

$n = 20$

$a = 5$

$d = a_2 - a_1 = 10 - 5 = 5$

$S_{20} = ?$

: BOARD MODEL QUESTION PAPERS :

9) The 10th term of an arithmetic progression 5, 9, 13, …… is

One Mark Questions

Answer : 5, 9, 13……

$a_n = a + (n-1)d$

$a_{10} = 5 + (10-1)4$

$a_{10} = 5 + (9)4$

$a_{10} = 5 + 36$

$a_{10} = 41$

$n = 10$

$a = 5$

$d = a_2 - a_1 = 9 - 5 = 4$

$a_{10} = ?$

1 mark questions

10) If the nth term of an arithmetic progression is $4n^2 - 1$, then the 8th term is

Answer : $a_n = 4n^2 - 1$

$a_n = 4(8)^2 - 1$

$a_n = 256 - 1$

$a_n = 255$

11) 3, 1, -1, -3…... the common difference of this arithmetic progression is

Answer : $d = a_2 - a_1$

$= 1 - 3$

$= -2$

Two Mark Questions

12) How many two – digit numbers are divisible by 3 ?

Answer : 12, 15, 18,.....99

$a_n = a + (n - 1) d$

$99 = 12 + (n - 1) 3$

$99 = 12 + 3n - 3$

$99 = 9 + 3n$

$99 - 9 = 3n$

$90 = 3n$

$n = 30$

$a = 12$

$d = a_2 - a_1 = 15 - 12 = 3$

$a_n = 99$

$n = ?$

AP 2 MARK QUESTIONS

CLICK HERE/SCAN

13) Find the 15th term of the arithmetic progression 3,6,9……. using suitable formula.

Answer : 3, 6, 9 ……

$a_n = a + (n - 1) d$

$a_{15} = 3 + (15 - 1) 3$

$a_{15} = 3 + (14) 3$

$a_{15} = 3 + 42$

$a_{15} = 45$

$a = 3$

$d = a_2 - a_1 = 6 - 3 = 3$

$a_{15} = ?$

$n = 15$

ADDITIONAL PROBLEMS

14) If $a_n = 3n - 2$, then the value of a_4 is

A) 11 B) 8 C) 10 D) 12

Answer : C) 10

$\because a_4 = 3(4) - 2$

$= 12 - 2$

$a_4 = 10$

15) If $a_n = 2n^2 - 2$, then the value of a_3 is

A) 14 B) 25 C) 18 D) 16

Answer : D) 16

$\because a_n = 2(3)^2 - 2$

$= 2(9) - 2$

$= 18 - 2$

$a_3 = 16$

16) The common difference of the arithmetic progression 3, 1, –1, 3…. is

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

Answer : B) – 2 $\because d = a_2 - a_1 = 1 - 3 = -2$

17) The 6th term of the arithmetic progression 2, 5, 8…. is

A) 15 B) 16 C) 17 D) 18

Answer : C) 17

$\because a_n = a + (n-1)d$ $a = 2, n = 6, d = 5 - 2 = 3$

$a_6 = 2 + (6 - 1)\,3$

$= 2 + (5)\,3$

$= 2 + 15$

$a_6 = 17$

18) The 8th term of arithmetic progression 2, 7, 12……. is

A) 35 B) 36 C) 37 D) -38

Answer : C) 37

$\because a_n = a + (n-1)\,d$ $a = 2, n = 8, d = 7 - 2 = 5$

$a_8 = 2 + (8 - 1)\,5$

$= 2 + (7)\,5$

$= 2 + 35$

$a_8 = 37$

19) If $a_n = 5 - 2n$, then value of a_3 is

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

Answer : D) -1

$\because a_n = 5 - 2(3) = 5 - 6 = -1$

20) 5, ☐ ,13. One of the following can be written in box is

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

Answer : D) 9 $\because$ Mean $= \frac{a+b}{2} = \frac{5+13}{2} = 9$

21) The nth term of the arithmetic progression 4, 2, 0, -2…. is

A) 4 – 2n B) 4 + 2n C) 2 + 2n D) 2 –2n

Answer : D) 2 –2n

$\because$ $a_n = a + (n - 1)\, d$ $a = 4, n = n, d = 2 - 4 = -2$

$= 4 + (n - 1) - 2$

$= 4 - 2n + 2$

$a_n = 6 - 2n$

FORMULAS

22) n^{th} term of an arithmetic progression [General form of an A.P.]

$a_n = a + (n - 1)\, d$ **[If a, n &d of an A.P. are given]**

23) Sum of the nth term of an arithmetic progression [If a, n & d are given]

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

24) Sum of the n^{th}term of an arithmetic progression [If a, n &$a_n$or ℓ are given]

$S_n = \frac{n}{2}[\, a + a_n\,]$ **or** $S_n = \frac{n}{2}[\, a + \ell\,]$ **(If $a_n = \ell$)**

25) Sum of the 1st 'n' natural numbers. [If the number of terms are given]

$\Sigma n = \frac{n\,(n + 1)}{2}$

TRIGNOMETRY

ANNUAL EXAMINATION : SEPTEMBER – 2020 **One Mark Questions**

1) The value of $\sec^2 26° - \tan^2 26°$ is……

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

Answer :- D) 1

$\sec^2 26° - \tan^2 26° = 1 + \tan^2 26° - \tan^2 26° = 1$ ($\because$ $1 + \tan^2\Theta = \sec^2\Theta$)

2) If $\cos\Theta = \frac{24}{25}$, then write the value of $\sec\Theta$……

Answer :- $\sec\Theta = \frac{25}{24}$ ($\because$ $\sec\Theta = \frac{1}{\cos\theta}$)

3) If $\sin^2 A = 0$, then find the value of cos A……

Answer : cos A = 1

$$\sin^2 A + \cos^2 A = 1$$
$$\cos^2 A = 1 - \sin^2 A$$
$$\cos A = \sqrt{1 - \sin^2 A}$$
$$\cos A = \sqrt{1 - 0}$$
$$\cos A = \sqrt{1}$$
$$\cos A = 1$$

Introduction to trigonometry (part-1) 1 mark questions.
Click here/SCAN

4) If 13 sin Θ = 12, then the value of cosec Θ is ……. (June - 2020) (1m)

Answer :- $\sin\Theta = \frac{12}{13}$, $\operatorname{cosec}\Theta = \frac{13}{12}$ ($\because$ $\operatorname{cosec}\Theta = \frac{1}{\sin\theta}$)

5) Find the value of tan 45° + cot 45°…….. (June - 2020) (1m)

Answer :- tan 45° + cot 45°
= 1 + 1
= 2.

6) If Sin A = $\frac{1}{\sqrt{2}}$, the magnitude of angle A is…….. (KSEEB 2019 MQP - 1)

Answer :- The magnitude of angle A is 45°. ($\because$ sin 45 = $\frac{1}{\sqrt{2}}$)

7) If Sin Θ = $\frac{3}{5}$ andcosΘ = $\frac{4}{5}$, find the value of $\sin^2\Theta + \cos^2\Theta$……..

Answer :- $\sin^2\Theta + \cos^2\Theta = (\frac{3}{5})^2 + (\frac{4}{5})^2$

$= \frac{9}{25} + \frac{16}{25}$

$= \frac{25}{25}$

$= 1$

Introduction to trigonometry (part-2) 1 mark questions.

Click here/SCAN

8) Find the value of sin 90° + tan 45° ……..

(KSEEB MQP - 2) (1m)

Answer :- sin 90° + tan 45°

= 1 + 1 = 2

9) Find the value of sin 30° + cos 60° …….

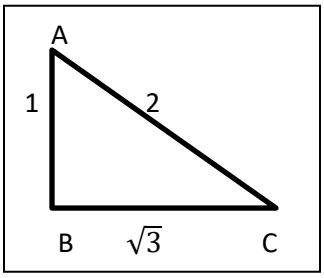
(KSEEB MQP-1) (1m)

Answer :- sin 30° + cos 60°

$= \frac{1}{2} + \frac{1}{2} = 1$

10) In the figure the value of sin C is …….. (KSEEB MQP – 2)

Answer :- sin C = $\frac{opp}{hyp} = \frac{1}{2}$



11) If cosA = $\frac{1}{2}$, then the value of angle A is

A) 90° B) 60° C) 30° D)45°

Answer : B) 60°

cosA = $\frac{1}{2}$ ($\because$ cos 60 = $\frac{1}{2}$)

A = 60°

12) Find the value ofcosec 30 +cos 60

Answer : cosec 30° + cos 60° = $\frac{2}{1} + \frac{1}{2} = 2\frac{1}{2}$

13) If tan Θ = $\frac{1}{\sqrt{3}}$, then the value of Θ is..

A) 90° B) 60° C) 30° D) 45°

Answer : C) 30°

tan 30° = $\frac{1}{\sqrt{3}}$ ∴ Θ = 30°

14) If sin 30° = $\frac{1}{2}$, then the value cosec 30°

Answer : cosec30° = $\frac{2}{1}$ = 2 (∵ cosecΘ = $\frac{1}{sin\theta}$)

15) If tanΘ = $\frac{3}{4}$, then the value of cot Θ is…….

Answer : cotΘ = $\frac{4}{3}$ (∵ cotΘ = $\frac{1}{tan\theta}$)

16) The value of $sin^2\Theta$ + $cos^2\Theta$?

Answer : 1

17) The value of cos 48° – sin 42° .

A) 0 B) $\frac{1}{4}$ C) $\frac{1}{2}$ D) 1

Answer : A) 0

cos 48° – sin 42°

= cos 48° – sin (90° – 48°)

= cos 48° – cos 48°

= 0

18) Find the value of $\frac{tan26°}{cot64°}$

Answer : $\frac{tan26°}{\cot(90° - 26°)} = \frac{tan26°}{tan26°}$ = 1

19) cosec 31° – sec 59°

Answer : cosec31° – sec (90°- 31°) (∵ sec (90° - Θ) = cosecΘ)

= cosec31° – cosec31°

= 0

ANNUAL EXAMINATION : MARCH/APRIL – 2019

Two Mark Questions

20) If $\sin\theta = \frac{12}{13}$. Find the value of $\cos\theta$ & $\tan\theta$.

Answer :- $AC^2 = AB^2 + BC^2$

$13^2 = 12^2 + BC^2$

$169 = 144 + BC^2$

$169 - 144 = BC^2$

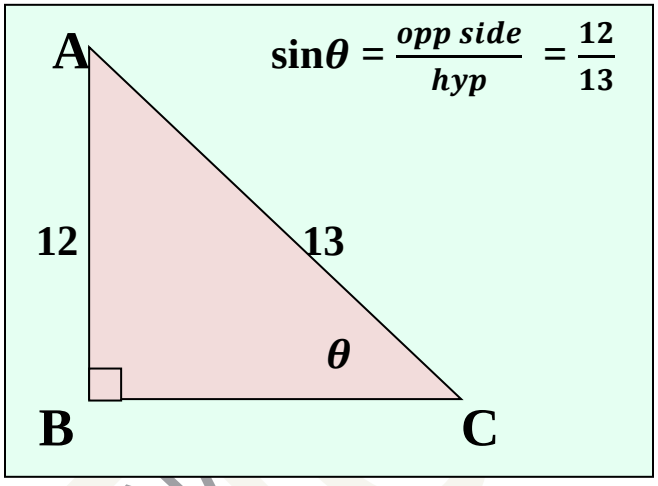
$25 = BC^2$

$BC = \sqrt{25}$

$BC = 5$

$\cos\theta = \frac{adj\ side}{hyp} = \frac{5}{13}$

$\tan\theta = \frac{opp\ side}{adj} = \frac{12}{5}$



21) If $\sqrt{3}\tan\theta = 1$, θ is acute angle, then find the value of $\sin3\theta + \cos2\theta$

Answer :- $\sqrt{3}\tan\theta = 1$

$\tan\theta = \frac{1}{\sqrt{3}}$

$\tan\theta = \tan30°$

$\theta = 30°$

$\sin3\theta + \cos2\theta = \sin3(30°) + \cos2(30°)$

$= \sin90° + \cos60°$

$= 1 + \frac{1}{2} = \frac{2+1}{2} = \frac{3}{2}$

Introduction to trigonometry 2 mark questions.
Click here/SCAN

ANNUAL EXAMINATION : JUNE – 2017

22) Find the value of Sin30° X cos60° – tan²45°.

Answer :- Sin30° X cos60° – tan²45°

$$= \frac{1}{2} \times \frac{1}{2} - (1)^2$$

$$= \frac{1}{4} - 1$$

$$= \frac{1}{4} - \frac{4}{4}$$

$$= -\frac{3}{4}$$

$\sin 30° = \frac{1}{2}$
$\cos 60° = \frac{1}{2}$
$\tan 45° = 1$

ANNUAL EXAMINATION : SEPTEMBER – 2020

23) Prove that CosecA (1 – cosA) (cosecA + cotA) = 1

Answer :- CosecA (1 – cosA) (cosecA + cotA) = 1

$$\text{LHS} = \frac{1}{\sin A}(1 - \cos A)\left[\frac{1}{\sin A} + \frac{\cos A}{\sin A}\right]$$

$$= \left[\frac{1 - \cos A}{\sin A}\right]\left[\frac{1 + \cos A}{\sin A}\right]$$

$$= \frac{1 - \cos^2 A}{\sin^2 A}$$

$$= \frac{\sin^2 A}{\sin^2 A} = 1 = \text{RHS}$$

FORMULAS

1) $\sin\theta = \frac{opposite}{hypotenuse}$ 2) $\cos\theta = \frac{Adjascent}{hypotenuse}$ 2) $\cos(90^0 - \theta) = \sin\theta$ 3) $\tan\theta = \frac{opposite}{Adjascent}$ 3) $\tan(90^0 - \theta) = \cot\theta$ 4) $\text{cosec}\,\theta = \frac{hypotenuse}{opposite}$ 4) $\text{cosec}(90^0 - \theta) = \sec\theta$ 5) $\sec\theta = \frac{hypotenuse}{Adjascent}$ 5) $\sec(90^0 - \theta)\ \text{cosec}\,\theta$ 6) $\cot\theta = \frac{Adjascent}{opposite}$ 6) $\cot(90^0 - \theta) = \tan$	1) $\sin\theta = \frac{1}{Cosec\,\theta}$ 2) $\cos\theta = \frac{1}{Sec\,\theta}$ 3) $\tan\theta = \frac{\sin\theta}{Cos\,\theta}$ 4) $\text{cosec}\,\theta = \frac{1}{Sin\,\theta}$ 5) $\sec\theta = \frac{1}{Cos\,\theta}$ 6) $\cot\theta = \frac{\cos\theta}{Sin\,\theta}$	1) $\sin(90^0 - \theta) = \cos\theta$ 2) $\cos(90^0 - \theta) = \sin\theta$ 3) $\tan(90^0 - \theta) = \cot\theta$ 4) $\text{cosec}(90^0 - \theta) = \sec\theta$ 5) $\sec(90^0 - \theta)\ \text{cosec}\,\theta$ 6) $\cot(90^0 - \theta) = \tan\theta$

Table for the valuesof the all trigonometric ratios.

θ	0^0	30^0	45^0	60^0	90^0
$\sin\theta$	0	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1
$\cos\theta$	1	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0
$\tan\theta$	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	Not defined
$\text{cosec}\,\theta$	Not defined	2	$\sqrt{2}$	$\frac{2}{\sqrt{3}}$	1
$\sec\theta$	1	$\frac{2}{\sqrt{3}}$	$\sqrt{2}$	2	Not defined
$\cot\theta$	Not defined	$\sqrt{3}$	1	$\frac{1}{\sqrt{3}}$	0

Trigonometric identities
1) $\sin^2\theta + \cos^2\theta = 1$
2) $\sec^2\theta - \tan^2\theta = 1$ [for $0^0 \leq \theta < 90^0$]
3) $\text{cosec}^2\theta = 1 + \cot^2\theta$ [for $0^0 \leq \theta < 90^0$]

DAVANAGERE DISTRICT
MATHS PRACTICE PAPER - 1

TIME. 2 hrs **MAX MARKS :40**

I. Choose the right answer for the following questions. **1 x 3 = 3**

1. In an arithmetic progression, if a_n = 2n + 1,then the common difference of the given progression is ----------
   (a) 3 (b) 2 (c) 4 (d) 5
2. The lines represented by x + 2y – 4 = 0 and 2x + 4y – 12 = 0 are ------
   (a) intersecting lines (b) parallel lines
   (c) coincident lines (d) perpendicular lines to each other.
3. The value of $\cos 38^0 - \sin 52^0$ is -----
   (a) 1 (b) -1 (c) 0 (d) 5

II. Answer the following. **1 x 2 = 2**

4. Find the coordinates of the mid-point of the line joining the points (x_1,y_1) and (x_2,y_2).
5. A solid piece of iron is in the form of a cuboid of dimensions 10cm X 5cm X 2cm. Find its volume.

III. Do as directed. **2 x 6 = 12**

6. Find the sum of 5 + 8 + 11 +……. to 10 terms using the formula.
7. Solve the following pair of linear equations.
   2x + 3y = 11
   2x – 4y = - 24
8. Draw a circle of radius 4 cm and construct a pair of tangents to the circle such that the angle between the tangent is 60°.
9. Find the co-ordinates of the point which divides the join of (-1, 7) and (4, - 3) in the ratio 2 : 3.

   OR

   Find the distance between the points (-5, 7) and (-1, 3).
10. Factorise: $x^2 + 7x + 12 = 0$.

    OR

    For what value of 'k' the roots of $2x^2 + kx + 3 = 0$ are equal.
11. If $\sin\theta = \frac{12}{13}$ Find the value of cosθ and tanθ.

IV. Do as directed. **3 x 5 = 15**

12. Construct a triangle with sides are 5 cm, 6cm and 7cm. and then construct another triangle whose side are $\frac{7}{5}$ of the corresponding sides of

the constructed triangle.

13. Prove that "the length of tangents drawn from an external point to a circle are equal".

14. During medical checkup of 35 students of a class their weight are recorded as follows. Draw a <u>less than type</u> of ogive for the given data

Weight in(kg)	No .of students
Less than 38	0
Less than 40	3
Less than 42	5
Less than 44	9
Less than 46	14
Less than 48	28
Less than 50	32
Less than 52	35

15. Calculate the median of the following data.

C – I	20 – 40	40 – 60	60 – 80	80 – 100
f	7	15	20	8

OR

Calculate the mean for the following frequency distribution.

C – I	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
f	5	8	14	9	4

16. Find the area of a triangle whose vertices are (10, -6) (2, 5) and (-1, 3).

V. <u>Answer the following.</u> **2 x 4 = 8**

17. Prove that " If a line is drawn parallel to one side of the triangle to intersect the other two sides in distinct points, the other two sides are divided in the same ratio".

18. Find the solution of the following pair of linear equations by graphical method.

$2x + y = 8$ $x + y = 5$

DAVANAGERE DISTRICT
MATHS PRACTICE PAPER - 2

TIME. 2 hrs **MAX MARKS : 40**

I.Choose the right answer for the following questions. **1 x 3 = 3**

1. **If the nth term of an arithmetic progression is a_n = 3n - 2, then its 9th term is-----**
   (a) 30 (b) 15 (c) 11 (d) 25
2. **The distance between the point (4, 3) and the origin is ----------**
   (a) 7 units (b) 25 units (c) 5 units (d) 6 units
3. **If the ratio of areas of two similar triangles is 16:81 then the ratio of their corresponding sides is ----------**
   (a) 2 : 3 (b) 7 : 9 (c) 4 : 9 (d) 81 : 16

II. Answer the following. **1 x 2 = 2**

4. **Write the general form of a pair of linear equations in two variables.**
5. **Write the formula to find the volume of sphere.**

III. Do as directed. **2 x 6 = 12**

6. **Find the sum of first 20 terms of arithmetic series 5 + 10 + 15 + ……. using suitable formula.**
7. **Solve: 10x + 3y = 75 and 6x – 5y = 11.**
8. **Draw a circle of radius 5 cm and construct a pair of tangents to the circle such that the angle between the radii is 110°.**
9. **Find the co-ordinates of the mid-point of the line joining the points (2, 3) and (4, 7).**

   OR

   Find the co-ordinates of the points which divides the line segment joining the points (-5, 11) and (4, -7) in the ratio 7 : 2.
10. **Find the value of the discriminant of the quadratic equation $2x^2 - 5x - 1 = 0$, and hence write the nature of roots.**

    OR

    Solve: $2x^2 - 3x - 2 = 0$ by using quadratic formula.
11. **If $\sqrt{3}\tan\theta = 1$. θ is acute angle,then find the value of $\sin 3\theta + \cos 2\theta$.**

IV. Do as directed. **3 x 5 = 15**

12. **Construct a triangle with sides are 5 cm, 6cm and 7cm, and then construct another triangle whose side are $\frac{3}{5}$ of the corresponding sides of the constructed triangle.**
13. **Prove that "the tangent at any point of a circle is perpendicular to the radius through the point of contact".**
14. **The following table given the production yield per hectare of what of 100 farm of a village. Change the distribution to a more than type distribution and draw its ogive.**

production yield in (kg) hectare	50 – 55	55 – 60	60 – 65	65 – 70	70 – 75	75 – 80
No. of forms	2	8	12	24	38	16

15. **Find the median for the data in the following distribution table.**

Weight in kg	15 – 20	20 – 25	25 – 30	30 – 35	35 – 40
No . of students	2	3	6	4	5

OR

Find the mode for the data in the following distribution table.

C-I	0-20	20-40	40-60	60-80	80-100	100-120
f	10	35	52	61	38	29

16. **Find the area of a triangle whose vertices are (2, 3) (-1, 0) and (2,- 4).**

V. Answer the following. **2 x 4 = 8**

17. **Prove that "the ratio of areas of two similar triangles is equal to the square of the ratio of their corresponding sides".**
18. **Solve graphically: 5x + y = 17 and 2x – 2y = 2.**

DAVANAGERE DISTRICT
MATHS PRACTICE PAPER - 3

MARKS : 40

I. Choose the right answer for the following questions. **1 x 3 = 3**

1. The 10th term of an A.P. 5, 9, 13, …… is ----------
   (a) 41 (b) 4 (c) 14 (d) 45
2. If the area of the circular base of a cylinder is 22 cm^2 and its height is 10cm , then the volume of cylinder is----------
   (a) 2200cm^2 (b) 2200 cm^3 (c) 220 cm^3 (d) 220 cm^2
3. In the pair of linear equations x + y = 9 and x – y = 1,the values of x and y are-------
   a) 5 and 4 b) 4 and 5 c) 6 and 3 d) 3 and 6

II. Answer the following. **1 x 2 = 2**

4. Find the distance between (0, 0) and (6, 8).
5. State Pythagoras theorem.

III. Do as directed. **2 x 6 = 12**

6. How many two-digit numbers are divisible by 3?
7. Find the solutions for the following pair of linear equations.
   x + y = 14 and x – y = 4.
8. Draw a circle of radius 3 cm and construct a pair of tangents to the circle such that the angle between the tangent is 60°.
9. Find the co-ordinates of the mid-point of the line joining the points (6, 2) and (4, 4).

   OR

   Find a point on the y – axis equidistant from (-5, 2) and (9, -2).
10. Find the roots of $3x^2 - 5x + 2 = 0$ by using quadratic formula.

    OR

    Find the nature of the roots of the equation: $2x^2 - 3x + 5 = 0$
11. Find the value of Sin30° x cos60° - $\tan^2 45°$.

IV. Do as directed. **3 x 5 = 15**

12. Construct a triangle ABC with sides BC = 3 cm, AB = 6 cm and AC = 4.5 cm. Then construct a triangle whose sides are $\frac{4}{3}$ of the corresponding sides of triangle ABC.

13. **Prove that "the length of tangents drawn from an external point to a circle are equal".**

14. **The following table gives the information of daily income of 50 workers of a factory draw a <u>less than ogive</u> for given data.**

Daily income	Number of workers
less than 100	0
less than 120	8
less than140	20
less than160	34
less than180	44
less than200	50

15. **Find the mode for the data in the following distribution table.**

Frequency size	1 – 3	3 – 5	5 – 7	7 – 9	9 – 11
No. of students	7	8	2	2	1

OR

Find the mean for the data in the following distribution table.

C - I	0 – 6	6 – 12	12 – 18	18 – 24	24 – 30
f	1	4	9	3	3

16. **Find the area of a triangle whose vertices are (6, -2) (-3, 5) and (-1,- 2).**

<u>V. Answer the following.</u> **2 x 4 = 8**

17. **If in two triangles corresponding angles are equal,then their corresponding sides are in the same proportion.Hence prove that the two triangles are similar.**

18. **Solve graphically: 2x + y = 8 and x – y = 1**

DAVANAGERE DISTRICT
MATHS PRACTICE PAPER – 4

MARKS : 40

I. Choose the right answer for the following questions. **1 x 3 = 3**

1. 3, 1, -1, -3 …... the common difference of this AP is----------
   (a) 2 (b) -2 (c) 4 (d) 0
2. The roots of equation $x^2 = 49$ is -----
   (a) 7 and -7 (b) 24 and 5 (c) 8 and -8 (d) 7 and 0
3. The value of $\tan^2 60^0$ is -----
   $(a)\ \sqrt{3}$ (b) $\frac{1}{3}$ (c) 3 (d) $\frac{1}{\sqrt{3}}$

II. Answer the following. **1 x 2 = 2**

4. State basic proportionality theorem.
5. Write the formula to find the total surface area of the cone whose radius is 'r' units and slant height is 'l'units .

III. Do as directed. **2 x 6 = 12**

6. Find the 15th term of the Arithmetic progression 3, 6, 9……. using suitable formula.
7. Solve: x – y = 26 and x – 3y = 0.
8. Draw a circle of radius 3.5 cm and construct a pair of tangents from a point at a distance of 7cm from the centre of the circle.
9. Find the distance between the points A(8, -3) and B(0, 9) by using distance formula.

   OR

   If the distance between (2, -3) and (10, y) is 10 units, find the value of y.
10. Factorise : $6x^2 + 7x - 10 = 0$.

    OR

    Find the roots of $x^2 + 4x + 5 = 0$ by using formula method.
11. Prove that CosecA (1 - cosA) (cosecA + cotA) = 1

IV. Do as directed. **3 x 5 = 15**

12. Construct a triangle with sides are 6 cm, 7cm and 8cm, And then construct another triangle whose side are $\frac{3}{4}$ of the corresponding sides of the constructed triangle.

13. Prove that "the tangent at any point of a circle is perpendicular to the radius through the point of contact".

14. Change the following distribution to a <u>more than type</u> distribution and draw its ogive.

C – I	0 - 3	3 - 6	6 - 9	9 - 12	12 - 15
f	9	3	5	3	1

15. Calculate the mode for the following frequency distribution table.

C – I	0 – 5	5 – 10	10 – 15	15 – 20	20 – 25
f	2	9	5	3	1

OR

Calculate the median for the following frequency distribution table.

C-I	65 – 85	85-105	105-125	125-145	145-165	165-185	185-205
f	4	5	13	20	14	8	4

16. Find the area of the triangle having vertices (3, 8) (-4, 2) and (5, -1)

<u>V. Answer the following.</u> **2 x 4 = 8**

17. Prove that " In a right angled triangle the square on the hypotenuse is equal to the sum of the square on the other two sides ".

18. Solve graphically : x + y = 2 and 2x – y = 1.

******

TARGET-40 SSLC 2020 STUDENT SELF ASSESSMENT SHEET		
CONCEPTS	**POSSIBLE MARKS**	√
THEOREMS 1) Thales theorem 2) A – A Criteria theorem 3) Area of similar triangle related theorem 4) Pythagoras theorem 5) Circle theorem – 01 6) Circle theorem – 02	4+3 OR 5+3 Total = 7	
CONSTRUCTION		
1) Line bisect 2) Similar triangle construction 3) Tangentconstruction i) Given angle between the radii & radius of the circle ii) Given distance from the external point & radius of the circle	2+3+4 Total = 9	
Pair of linear equation in two variables		
1) Elimination method 2) Graph method	2 + 4 Total = 6	
STATISTICS		
1) Ogive construction [Less than type or More than type] 2) Mean / Median / Mode	3 + 3 Total = 6	
QUADRATIC EQUATION		
1) Formula method 2) Nature of the roots	2 + 2 Total = 4	
CO-ORDINATE GEOMETRY		
1) Distance formula 2)Mid point formula 3) Section formula 4) Area of triangle Problems based on above formulas	2 +3 Total = 5	
ARITHMETIC PROGRESSION		
Problems based on a_n,S_n and Σn formulas	1, Total = 1	
Theorems statements, All chapters formulas, properties of tangents and P. of L. E. Problems based on trigonometric values and identities	2	
TOTAL = 40		

ಕರ್ನಾಟಕ ಸರ್ಕಾರ

ಉಪನಿರ್ದೇಶಕರ ಕಛೇರಿ,

ಸಾರ್ವಜನಿಕ ಶಿಕ್ಷಣ ಇಲಾಖೆ, ದಾವಣಗೆರೆ.

2020-21 ನೇ ಸಾಲಿನ SSLC ಪರೀಕ್ಷಾ ಮಾರ್ಗದರ್ಶಿ

'ಗಣಿತ'- ಇಂಗ್ಲೀಷ್ ಮಾಧ್ಯಮ (ENGLISH MEDIUM)

ಪರಿಷ್ಕೃತ ಪಠ್ಯದನ್ವಯ ತಯಾರಿಸಿದ ಪರೀಕ್ಷಾ ಅಭ್ಯಾಸ ಪಠ್ಯ.

'ನವನೀತ'

-:ಪರಿಕಲ್ಪನೆ ಮತ್ತು ಮಾರ್ಗದರ್ಶನ:-

ಶ್ರೀಯುತ ಸಿ ಆರ್ ಪರಮೇಶ್ವರಪ್ಪ

ಉಪನಿರ್ದೇಶಕರು, ಸಾರ್ವಜನಿಕ ಶಿಕ್ಷಣ ಇಲಾಖೆ, ದಾವಣಗೆರೆ.

ಶ್ರೀಯುತ ಸುರೇಶಪ್ಪ ಎಂ,
ಗಣಿತ ವಿಷಯ ಪರಿವೀಕ್ಷಕರು.
ಉಪನಿರ್ದೇಶಕರ ಕಛೇರಿ,

ಶ್ರೀಯುತ ಬಿ ಎಸ್ ಜಗದೀಶ್ವರ
ಶಿಕ್ಷಣಾಧಿಕಾರಿಗಳು, ಉಪನಿರ್ದೇಶಕರ ಕಛೇರಿ,
ಸಾರ್ವಜನಿಕ ಶಿಕ್ಷಣ ಇಲಾಖೆ, ದಾವಣಗೆರೆ.

QR CODE ಮೇಲೆ ಕ್ಲಿಕ್ ಮಾಡಿದರೆ ಅದರ ಪಕ್ಕದಲ್ಲಿರುವ ಪ್ರಶ್ನೆ- ಉತ್ತರದ (ಆ ಮಾದರಿಯ) ವಿಡಿಯೋ ನೋಡಬಹುದು.ಈ ಅಭ್ಯಾಸ ಪಠ್ಯದ ಪ್ರಿಂಟ್ ತೆಗೆದುಕೊಂಡರೆ QR CODE ಅನ್ನು SCAN ಮಾಡಿದರೆ ಅದರ ಪಕ್ಕದಲ್ಲಿರುವ ಪ್ರಶ್ನೆ- ಉತ್ತರದ (ಆ ಮಾದರಿಯ) ವಿಡಿಯೋ ನೋಡಬಹುದು.

ಸಂಪನ್ಮೂಲ ರಚನೆ-

ಶ್ರೀಮತಿ ಸುಜಾತ ಹೆಚ್ ಎನ್, ಸಹ ಶಿಕ್ಷಕಿ,

ರಾಜನಹಳ್ಳಿ ಸೀತಮ್ಮ ಬಾಲಕಿಯರ ಸರ್ಕಾರಿ ಪದವಿಪೂರ್ವ ಕಾಲೇಜು,(ಪ್ರೌಢಶಾಲಾ ವಿಭಾಗ),

ದಾವಣಗೆರೆ ದಕ್ಷಿಣ ವಲಯ

ಶ್ರೀಮತಿ ಭುವನೇಶ್ವರಿ ಡಿ ಕೆ.,ಸಹಶಿಕ್ಷಕಿ,ಸರ್ಕಾರಿ ಪದವಿಪೂರ್ವ ಕಾಲೇಜು (ಪ್ರೌಢಶಾಲಾ ವಿಭಾಗ),

ಚನ್ನಗಿರಿ.

ಶ್ರೀಮತಿ ರೀನಾ ಎನ್ ಎಂ,ಸಹಶಿಕ್ಷಕಿ, ಸರ್ಕಾರಿ ಪ್ರೌಢಶಾಲೆ, ಗುತ್ತೂರು,ಹರಿಹರ ತಾಲೂಕು

ಶ್ರೀಮತಿ ಸರೋಜಿನಿ ಕೆ ಸಿ,ಸಹಶಿಕ್ಷಕಿ,ಸರ್ಕಾರಿ ಪ್ರೌಢಶಾಲೆ, ಕೊಕ್ಕನೂರು,ಹರಿಹರ ತಾಲೂಕು

ಶ್ರೀಮತಿ ಲಕ್ಷ್ಮೀ ಬಿ, ಸಹಶಿಕ್ಷಕಿ,ಸರ್ಕಾರಿ ಪದವಿಪೂರ್ವ ಕಾಲೇಜು (ಪ್ರೌಢಶಾಲಾ ಭಾಗ),

ಕೂಲಂಬಿ- ಕುಂದೂರು. ಹೊನ್ನಾಳಿ ತಾಲೂಕು.

ಶ್ರೀಮತಿ ಅಂಜನಾ ರಾವ್, ಸಹಶಿಕ್ಷಕಿ,ಕರ್ನಾಟಕ ಪಬ್ಲಿಕ್ ಸ್ಕೂಲ್, ನ್ಯಾಮತಿ,ಹೊನ್ನಾಳಿ ತಾಲೂಕು.

ಸಂಪನ್ಮೂಲ ಪರಿಶೀಲನೆ-1. ಶ್ರೀಮತಿ ಭವಾನಿ ಕೆ ಎಂ,ಸಹಶಿಕ್ಷಕಿ, ಸರ್ಕಾರಿ ಉರ್ದು ಪ್ರೌಢಶಾಲೆ,

ಜೋಡಿ ಹೊಸೂರು,ಚನ್ನಗಿರಿ.

2. ಶ್ರೀಮತಿ ಅನಿತಾ ಬಿ ಆರ್, ಸಹಶಿಕ್ಷಕಿ, ಸರ್ಕಾರಿಪ್ರೌಢಶಾಲೆ

ಹಿರೇ ತೊಗಲೇರಿ, ದಾವಣಗೆರೆ ದಕ್ಷಿಣ ವಲಯ.

3. ಶ್ರೀಮತಿ ಅನಿತಾ ಬಿ ಎಂ, ಸಹಶಿಕ್ಷಕಿ, ಸರ್ಕಾರಿಪ್ರೌಢಶಾಲೆ,

ರಸ್ತೆ ಮಾಚಿಕೆರೆ, ಜಗಳೂರು ತಾ

-ವಿಡಿಯೋಗಳನ್ನು ತಯಾರಿಸಿದವರು-

1. ಶ್ರೀಮತಿ ಸುಜಾತ ಹೆಚ್ ಎನ್ 2. ಶ್ರೀಮತಿ ಸರೋಜಿನಿ ಕೆ ಸಿ

3. ಶ್ರೀಮತಿ ರೀನಾ ಎನ್ ಎಂ 4. ಶ್ರೀಮತಿ ಲಕ್ಷ್ಮೀ ಜಿ

ಕರ್ನಾಟಕ ಪ್ರೌಢಶಿಕ್ಷಣ ಪರೀಕ್ಷಾ ಮಂಡಳಿ

ಮಲ್ಲೇಶ್ವರಂ, ಬೆಂಗಳೂರು–560003.

KARNATAKA SECONDARY EDUCATION EXAMINATION BOARD

Malleshwaram, Bengaluru – 560003.

2020-21 MODEL PAPER - 1

Subject : MATHEMATICS **Subject Code : 81E**

Time : 3 hrs. 15 minutes **Max. Marks : 80**

English Medium

Regular Fresh

General Instructions to the Candidate :

1. This question Paper consists of objective and subjective types of 38 questions.

2. This question paper has been sealed by reverse jacket. You have to cut on the right side to open the paper at the time of commencement of the examination. Check whether all the pages of the question paper are intact.

3. Follow the instructions given against both the objective and subjective types of questions.

4. Figures in the right hand margin indicate maximum marks for the questions.

5. The maximum time to answer the paper is given at the top of the question paper. It includes 15 minutes for reading the question paper.

I. Four choices are given for each of incomplete / statement / questions. Choose the correct answer and write the complete answer along with its letter of alphabet. 8 x 1 = 8

1. If the pair of Linear equations $x + 2y = 3$ and $2x + 4y = k$ are coincide then the value of 'k' is :

   A. 3 B. 6

   C. -3 D. -6

2. The nth term of an arithmetic progression is $a_n = 4n + 5$ then the 3rd term is :

   A. 5 B. 9

   C. 13 D. 17

3. If the roots of the quadratic equation $x^2 + 6x + k = 0$ are equal, then the value of 'k' is :

   A. 9 B. -9

   C. 8 D. 5

4. The value of $\sin 60^0 \times \cos 30^0$ is :

   A. $\frac{1}{4}$

   B. $\frac{\sqrt{3}}{4}$

   C. $\frac{3}{4}$

   D. $\frac{1}{2}$

5. The distance of the co-ordinate p(4, 3) from the x- axis is :

   A. 2 units B. 3 units

   C. 4 units D. 5 units

6. A straight line intersecting a circle at two points is called :

   A. a secant B. a tangent

   C. radius D. a normal

7. The volume of a cylinder is 300 m^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

8. The surface area of a sphere of radius 7cm is :

   A. 154 cm^2

   B. 308 cm^2

   C. 616 cm^2

   D. 770 cm^2

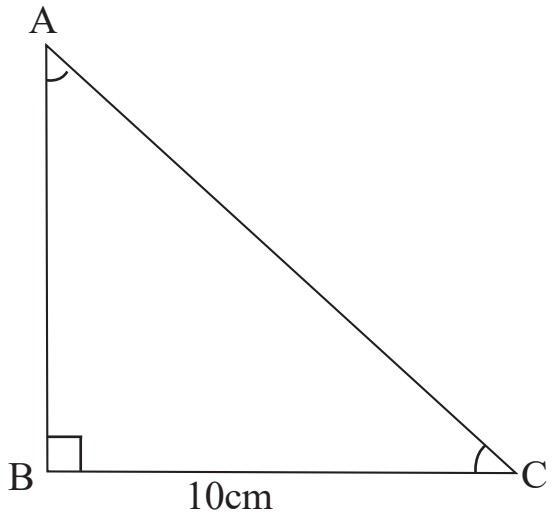
II. Answer the following questions in a sentence each. 8 x 1 = 8

9. How many solutions have the pair of linear equations $2x+3y-9=0$ and $4x + 6y - 18 = 0$?

10. Write the standard form of a quadratic equation.

11. Find the value of $\tan\theta - \cot(90^0 - \theta)$.

12. In the figure $\angle B=90^0$, $\angle A = \angle C$ and BC=10cm, then find the value of $\tan 45^0$.

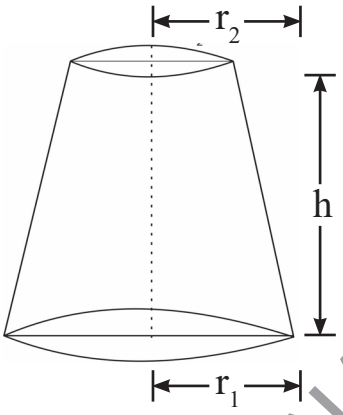


13. Write the co-ordinates of the midpoint of the line segment joining the points $A(x_1, y_1)$ and $B(x_2, y_2)$.

14. Find the median of the scores 5, 8, 14, 16, 19 and 20 ?

15. State 'Thale's theorem ?

16. Write the formula to find the curved surface area of the frustum of a cone as shown in the figure?



III. Answer the following questions. 8 x 2 = 16

17. Find the 25th term of an arithmetic progression 2, 6, 10, 14, ...

18. Find the sum of first 20 terms of the arithmetic progression 3, 8, 13, ... using the formula.

OR

Find the sum of the first 30 positive integers divisible by 6.

19. Solve : $3x + y = 15$
$2x - y = 5$

20. Solve by using quadratic formula : $x^2-3x+1=0$.

21. Find the discriminant of the quadratic equation $2x^2-6x+3=0$ and hence write the nature of roots.

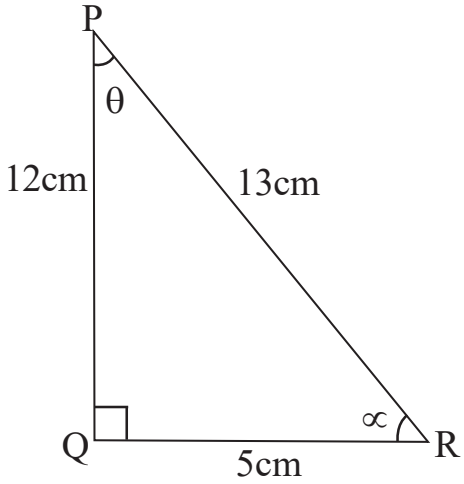
OR

Prove that the quadratic equation $x^2+ax-4=0$ has distinct, real roots.

22. Find the distance between the co-ordinate of the points A(2, 3) and B(10, -3).

23. Draw a line segment of AB=8cm and divide it in the ratio 3:2 by geomtrical construction.

24. In the figure given below find the value of sinθ and cos∝ ?



IV. Answer the following questions. **9 x 3 = 27**

25. The sum of two natural numbers is 9 and the sum of their reciprocals is $\frac{9}{20}$. Find the numbers.

OR

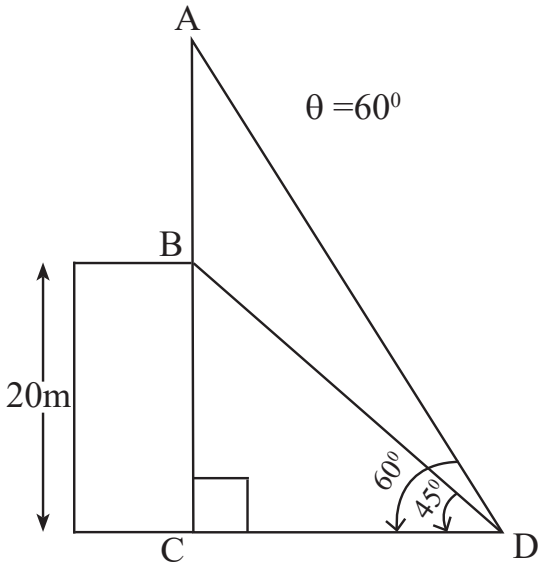
The perimeter and area of a rectangular play ground are 80m and 384m^2 respectively. Find the length and breadth of the play ground.

26. Prove that $\frac{Sin\theta}{1-\cot\theta}+\frac{\cos\theta}{1-\tan\theta}=Sin\theta+\cos\theta$.

OR

Prove that $\frac{\cos\theta-2\cos^3\theta}{2\sin^3\theta-\sin\theta}=\cot\theta$

27. From a point on the ground, the angles of elevation of the top and bottom of a transmission tower fixed at the top of a 20m high building are 60^0 and 45^0 respectively. Find the height of the transmission tower.



28. Find the value of 'k'. If the co-ordinates of the points A(2, -2), B(-4, 2) and C(-7, k) are collinear.

29. Calculate the 'mean' for the frequency distribution table given below, by direct method.

Class internal	Frequency
5 - 15	4
15 - 25	3
25 - 35	6
35 - 45	5
45 - 55	2

OR

Find the 'mode' of the frequency distribution table given below.

Class internal	Frequency
0 - 10	7
10 - 20	9
20 - 30	15
30 - 40	11
40 - 50	8

30. The following table gives the production yield per hectare of wheat of 100 farms of a village. Draw a 'more than type ogive' for the given data.

Production yield in kg/hectare	Cumulative Frequency
More than or equal to 50	100
More than or equal to 55	98
More than or equal to 60	90
More than or equal to 65	78
More than or equal to 70	54
More than or equal to 75	16

31. Prove that "the tangent at any point of a circle is perpendicular to the radius through the point of contact".

32. Draw a pair of tangents to a circle of radius 4cm which are inclined to each other at an angle of 70^0 and write the measure of its length.

33. A right circular metalic cone of height 20cm and base radius 5cm is melted and recast into a solid sphere. Find the radius of the sphere.

OR

A solid sphere of radius 3cm is melted and reformed by stretching it into a cylindrical shaped wire of length 9m. Find the radius of the wire.

V. Answer the following. 4 x 4 = 16

34. Find the solution of the following pair of linear equations by the graphical method.

$2x + y = 10$

$x + y = 6$

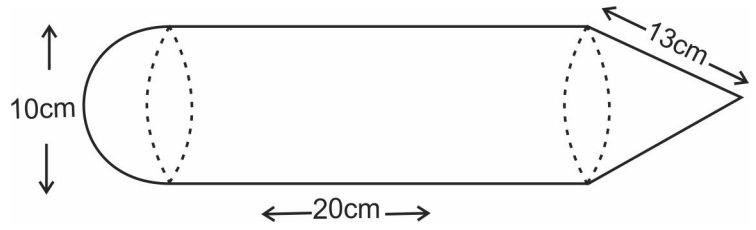
35. An arithmetic progression consists of 37 terms. The sum of the first 3 terms of it is 12 and the sum of its last 3 terms is 318, then find the first and last terms of the progression.

OR

The sum of the first 7 terms of an arithmetic progression is 140 and the sum of the next 7 terms of the same progression is 385 then find the arithmetic progression.

36. Construct a triangle with sides 4cm, 5cm, and 6cm and then another triangle whose sides are $\frac{5}{3}$ of the corresponding sides of the first triangle.

37. A toy is made in the shape of a cylinder with one hemisphere stuck to one end and a cone to the other end, as shown in the figure, the length of the cylindrical part of the toy is 20cm and its diameter is 10cm. If the slant height of the cone is 13cm. Find the surface area of the toy.



VI. Answer the following question : 1 x 5 = 5

38. Prove that the ratio of the areas of two similar triangles is equal to the square of the ratio of their corresponding sides.

ಕರ್ನಾಟಕ ಪ್ರೌಢಶಿಕ್ಷಣ ಪರೀಕ್ಷಾ ಮಂಡಳಿ

ಮಲ್ಲೇಶ್ವರಂ, ಬೆಂಗಳೂರು–560003.

KARNATAKA SECONDARY EDUCATION EXAMINATION BOARD

Malleshwaram, Bengaluru – 560003.

2020-21 MODEL PAPER - 2

Subject : MATHEMATICS **Subject Code : 81E**

Time : 3 hrs. 15 minutes **Max. Marks : 80**

English Medium

Regular Fresh

General Instructions to the Candidate :

1. This question Paper consists of objective and subjective types of 38 questions.

2. This question paper has been sealed by reverse jacket. You have to cut on the right side to open the paper at the time of commencement of the examination. Check whether all the pages of the question paper are intact.

3. Follow the instructions given against both the objective and subjective types of questions.

4. Figures in the right hand margin indicate maximum marks for the questions.

5. The maximum time to answer the paper is given at the top of the question paper. It includes 15 minutes for reading the question paper.

I. Four alternatives are given for each of incomplete statement / questions. Choose the correct answer and write the complete answer along with its letter of alphabet. 8 x 1 = 8

1. The Pair of lines $a_1x+b_1y+c_1=0$ and $a_2x+b_2y+c_2=0$ are intersecting lines then the ratio of their coefficients is :

A. $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$

B. $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

C. $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$

D. $\frac{a_1}{b_2} = \frac{b_1}{a_2}$

2. 2, x, 14 are in Arithmetic progression, then the value of x is :

A. 28 B. 16

C. 7 D. 8

3. The standard form of quadratic equation is :

A. $ax^2-bx+c=0$ B. $ax^2+bx+c=0$

C. $ax^2-bx-c=0$ D. $ax^2+bx-c=0$

4. Sin (90-θ) is equal to :

A. Cos θ. B. tan θ.

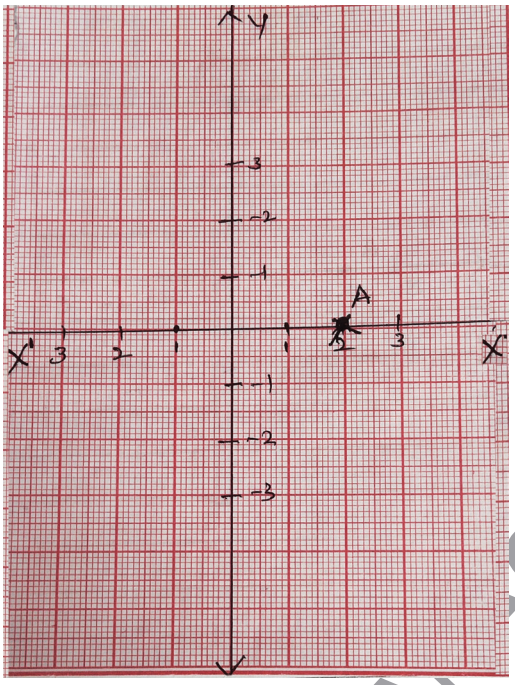
C. Sec θ. D. Cot θ.

5. The value of tan 45^0 is :

A. $\sqrt{3}$ B. 0

C. 1 D. $\frac{1}{\sqrt{3}}$

6. In the given graph. The co-ordinate of point A is :



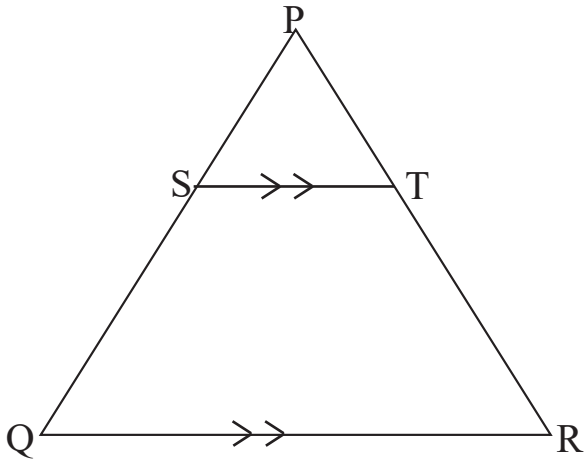
A. (-1, 0)
B. (1, -1)
C. (0, 2)
D. (2, 0)

7. The emperical relationship between the three measures of central tendency is :

A. 2 Median = Mode + 3 Mean
B. 3 Median = Mode + 2 Mean
C. Median = Mode + Mean
D. Median = Mode - Mean

8. In the given figure ST||QR then $\frac{PS}{SQ}$ is equal to :

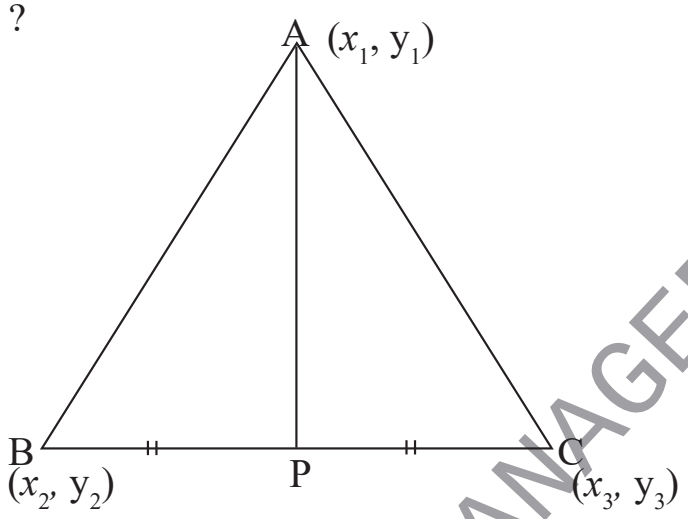
A. $\frac{PT}{TR}$
B. $\frac{PS}{TR}$
C. $\frac{PT}{SQ}$
D. $\frac{PT}{SR}$



II. Answer the following questions. 8 x 1 = 8

9. In equation x+y=7, if x=3, then find the value of y ?

10. In the given figure "P" is a midpoint of BC, write the formula to find the co-ordinate of P ?



11. Write the measure of angle formed between tangent to a circle and radius drawn from the centre of the circle to the point of contact of the tangent.

12. Write the formula to find the total suface area of a right cylinder ?

13. Write the formula to find the volume of a solid sphere ?

14. Write the mathematical relation between slant height (l) height (h) and radius (r) of a cone ?

15. In an arithmetic progression if a_n = 3n-2, then find the second term of the progression.

16. If, 15 cot A=8, then find the value of tan A?

III. Answer the following questions. 8 x 2 = 16

17. Solve by using elimination method ?

$$x + y = 8$$
$$2x - y = 7$$

18. Find the 10th term of arithmetic progression 2, 7, 12 ..... using the formula.

19. Find the sum of 2+5+8+..... to 20 terms using the formula.

20. Find the discriminant of the equation $3x^2-5x+2=0$ and hence write the nature of its roots.

21. Solve $x^2-2x+3=0$ by using the quadratic formula.

OR

Solve by Factorisation $x^2+5x+6=0$.

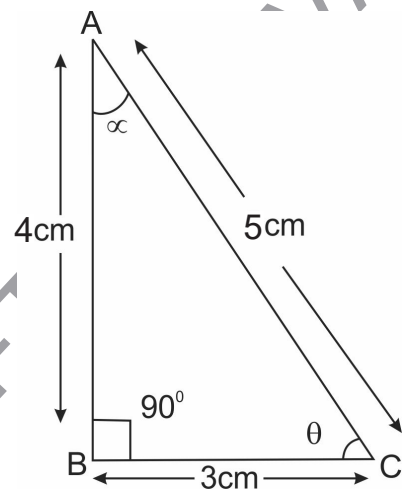
22. Find the distance between the points A(3, 6) and B(5, 7) using distance formula.

OR

Find the co-ordinates of the point P, which divides the line joining A(0, 0) and B(5, 10) in the ratio of 2:3.

23. Construct a tangent to a circle of radius 4cm at any point P on its circumference.

24. In the given figure, find the value of $\sin\alpha + \cos\theta$?



IV. Answer the following questions. 9 x 3 = 27

25. A train travels 480 km at a uniform speed. If the speed had been 10km/h more, it would have taken 4 hours less for the same journey, find the speed of the train?

OR

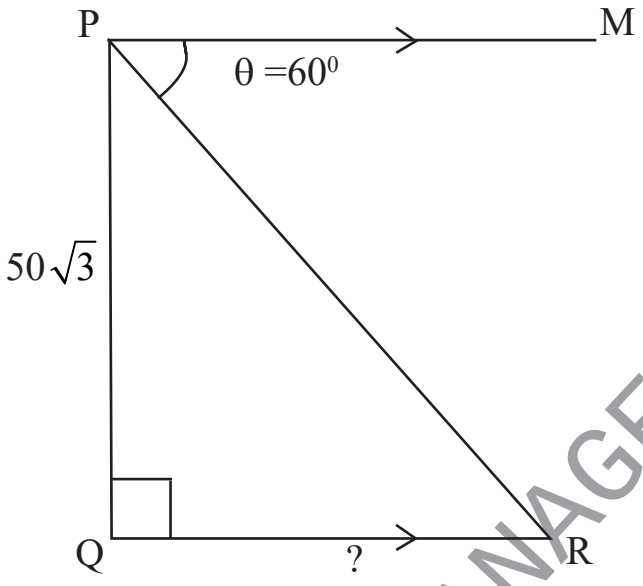
Find two consecutive odd positive integers, sum of whose squares is 290.

26. Prove that $\{\text{Cosec}\,(90\text{-}\theta) - \text{Sin}\,(90\text{-}\theta)\}\ \{(\text{Cosec}\theta - \text{Sin}\,\theta)\,(\tan\theta + \cot\theta)\} = 1$

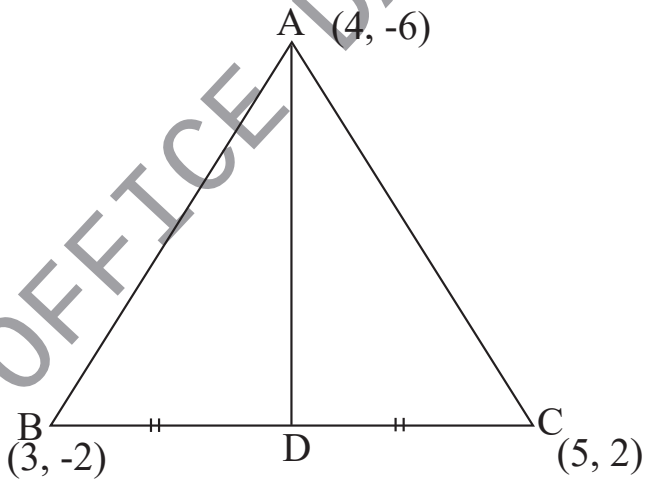
OR

Prove that $\dfrac{(Sin\theta - \cos\theta)}{(Sin\theta + \cos\theta)} + \dfrac{(Sin\theta + \cos\theta)}{(Sin\theta - \cos\theta)} = \dfrac{2}{(2Sin^2\theta - 1)}$

27. From the top of a building $50\sqrt{3}$ M high the angle of depression of a car on the ground is observed to be 60^0. Find the distance of the car from the Foot of a building.



28. Find the area of triangle ABC, whose co-ordinates are A(4, -6), B(3, -2) and C(5, 2) then find the length of the median AD?



29. Find the mean of the following data, by direct method.

Class internal	Frequency
1 - 5	4
5 - 9	3
9 - 13	5
13 - 17	7
17 - 21	1
	N = 20

OR

Find the mode of the following data.

Class internal	Frequency
0 - 10	6
10 - 20	9
20 - 30	15
30 - 40	9
40 - 50	1
	N = 40

30. Prove that "length of tangents drawn from an external point to a circle are equal.

31. The slant height of a frustrum of a cone is 4cm and perimeters of its circular bases are 18cm and 6cm, find the curved surface area of the frustrum of a cone.

OR

The circumference of the base of a cylinder is 132cm and its height is 25cm. Find the volume of the cylinder?

32. Draw a "less than type ogive" for the data given in the following table.

Class internal	Frequency
0 - 10	2
10 - 20	12
20 - 30	2
30 - 40	4
40 - 50	3

33. Construct tangents to a circle of radius 5cm such that the angle between the tangents is 60^0.

V. Answer the following. 4 x 4 = 16

34. Find the Solution to the given pair of linear equations by graphical method.

$x + y = 5$

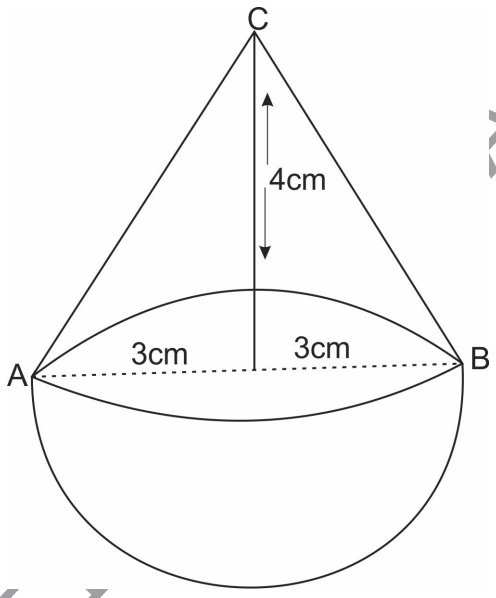
$2x - y = 4$

35. The third term of an arithmetic progression is 8 and its ninth term exceeds three times the third term by 2 find the sum of the first 19 terms.

OR

In an arithmetic progressive the sum of the three terms is 24, and their product is 480, write three terms of the arithmetic progression?

36. A toy is in the form of a cone mounted on a hemisphere with the some radius is as shown in the figure. If the diameter of the conical portion is 6cm and its height is 4cm, then find the surface area of the toy.



37. Construct a triangle ABC of its sides BC=4cm, AB=6cm and AC=4.5cm then construct a triangle similar to it, whose sides are $\frac{2}{3}$ of the corresponding sides of the triangle ABC.

VI. Answer the following question. **1 x 5 = 5**

38. State and Prove "Basic proportionally theorem"