

Four alternatives are given for each of the incomplete statement or questions. Choose the correct answer.

- 1) The lines representing $2x + 3y - 9 = 0$ & $4x + 6y - 18 = 0$ are
 A) Intersecting lines B) Perpendicular lines C) Parallel lines D) Coincident lines
- 2) 10th term of an A.P. 5,9,13,..... is
 A) 36 B) 31 C) 41 D) 21
- 3) Roots of the equation $ax^2+bx+c=0$ are
 A) $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$ B) $x = \frac{b \pm \sqrt{b^2-4ac}}{2a}$ C) $x = \frac{-b \pm \sqrt{b^2+4c}}{2a}$ D) $x = \frac{-b - \sqrt{b^2-4ac}}{2}$
- 4) Value of $\sin 30^\circ + \cos 60^\circ$ is
 A) $\frac{1}{2}$ B) $\frac{3}{2}$ C) $\frac{1}{4}$ D) 1
- 5) Distance between the origin and a point (3,4) is
 A) 5 B) 6 C) -5 D) -4
- 6) A line passing through 2 points on the circumference of a circle is
 A) Chord B) Secant C) Tangent D) Radius
- 7) Total Surface Area of a hemisphere is
 A) πr^2 B) $4 \pi r^2$ C) $\frac{4}{3} \pi r^2$ D) $3 \pi r^2$
- 8) If area of the circular base is 154 cm^2 , height = 10cm, then the volume of the cylinder is
 A) 15.40 cm^3 B) 15400 cm^3 C) 1.540 cm^3 D) 1540 cm^3
- 9) If $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ lines are inconsistent 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] $\frac{a_1}{a_2} = \frac{b_1}{b_2}$
- 10) In an A.P. if the 4th term is 9, common difference is 2, 3rd term is
 A) 2 B) 3 C) 5 D) 7
- 11) If a quadratic equation has two equal roots, then the discriminant is
 A) $b^2 - 4ac < 0$ B) $b^2 - 4ac > 0$ C) $b^2 - 4ac = 0$ D) $b^2 - 4ac \geq 0$
- 12) Value of $\sin^2\theta + \cos^2\theta$ is
 A) 0 B) 1 C) 2 D) 3
- 13) The coordinates of a point P(x,y) which divides the line segment joining the points A(x₁,y₁) and B(x₂,y₂) in the ratio $m_1 : m_2$ is

- A] $\left(\frac{m_1 x_2 + m_2 x_1}{m_1 + m_2}, \frac{m_1 y_2 + m_2 y_1}{m_1 + m_2} \right)$ B] $\left(\frac{m_1 x_2 - m_2 x_1}{m_1 + m_2}, \frac{m_1 y_2 - m_2 y_1}{m_1 + m_2} \right)$
 C] $\left(\frac{m_1 x_2 + m_2 x_1}{m_1 - m_2}, \frac{m_1 y_2 + m_2 y_1}{m_1 - m_2} \right)$ D] $\left(\frac{m_1 x_1 + m_2 x_2}{m_1 + m_2}, \frac{m_2 y_2 + m_2 y_2}{m_1 + m_2} \right)$

14) Tangents drawn at the ends of a diameter are mutually

- A) Perpendicular B) Parallel C) Intersecting D) Coinciding

15) Curved surface area of Cone is

- A) πrh B) $4\pi r(r+l)$ C) πrl D) $\pi r^2 l$

16) Corresponding sides of two similar triangles are in the ratio 1: 4. Areas of these triangles are in the ratio

- A) 1:2 B) 1:16 C) 1:4 D) 16:1

17) If $4x+py+8=0$ and $4x+4y+2=0$, represent parallel lines, the value of p is

- A) 1 b) 2 C) 4 d) 8

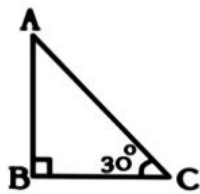
18) The discriminant of a quadratic equation $x^2 - 5x + 3 = 0$ is

- A) 25 B) 20 C) 13 D) -13

19) Value of $\frac{\sin 28}{\cos 62}$ is

- A) 0 B) 1 C) 2 D) 28

20) In $\triangle ABC$, $AB \perp BC$, $\angle ACB = 45^\circ$, $AB = 15m$, value of BC is



- A) 15m B) 10m C) 5m D) 1m

21) Midpoint of the line joining the points (6,2) and (4,4) is

- A) (5,2) B) (3,5) C) (2,5) D) (5,3)

22) If mean and median are 3 and 4 respectively, then the mode is

- A) 12 B) 1 C) 2 D) 3

23) In a right triangle square of the _____ is equal to the sum of the squares of other two sides.

- A) Perpendicular B) sum C) Hypotenuse D) Opposite

24) Formula to find the curved surface area of a Cylinder is

- A) πrh B) $4\pi r(r+l)$ C) $2\pi r(r+h)$ D) $2\pi rh$

25) 4 pens and 5 pencils together cost Rs.25. Represent this in the form of linear equation in two variables.

- A) $4x + 5y = 25$ B) $x + y = 25$ C) $x - y = 25$ D) $4x - 5y = 25$

26) Roots of $x^2 - 25 = 0$ are

- A) 25 and - 25 B) 5 and 0 C) -5 and 0 D) 5 and -5

27) The value of $\sin 90^\circ + \tan 45^\circ$.

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

28) If $\sec \theta = \frac{1}{\sqrt{5}}$, then $\cos \theta$ is

- A) 0 B) 1 C) 5 D) $\sqrt{5}$

29) The distance of the co-ordinate P(3,4) from the x-axis is

- A) 3 B) 4 C) 5 D) 1

30) Median of the scores 15,17,19,21,23,25 is

- A) 19 B) 20 C) 21 D) 6

31) If a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, then the other two sides are divided in the

- A) same point B) same ratio C) same distance D) same length

32) If the volume of a Cylinder is 300cm^3 , then volume of the cone of same base and height is

- A) 300cm^3 B) 200cm^3 C) 100cm^3 D) 50cm^3

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

- A) 10 B) 12 C) 8 D) 6

34) Which one of the following are similar figures?

- A) Rectangles B) Rhombuses C) Trapeziums D) Circles

35) Maximum number of tangents that can be drawn to a circle from an external point is

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

36) In a right triangle ABC, if $\angle B = 90^\circ$, $AB = 5\text{cm}$, $BC = 12\text{cm}$, the length of AC is

- A) 10cm B) 12cm C) 13cm D) 17cm

37) Angle formed by the line of sight with the horizontal when the point being viewed is above the horizontal level is

- A) angle of elevation B) angle of depression C) equal angle D) Right angle

38) Mean of 5,6,7,8,9,10 is

- A) 5 B) 9 C) 11 D) 45

39) We plot lower limits on the x-axis and the corresponding cumulative frequencies on the y axis in

- A) Histogram B) Pie chart C) Less than Ogive D) More than Ogive

40) If a Sphere is melted and recast in to the shape of a cylinder, the thing which remains same is,

- A) Length B) Radius C) Area D) Volume

1) Remember :-

★ ★

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

Intersecting
 line

Exactly
 one soln

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

Coincident
 lines

Infinitely
 many soln

[Inconsistent]

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

Parallel
 lines

No
 solution

Soln $2x + 3y - 9 = 0$ & $4x + 6y - 18 = 0$

$$\frac{2}{4} = \frac{3}{6} = \frac{-9}{-18}$$

$$\frac{1}{2} = \frac{1}{2} = \frac{1}{2} \Rightarrow \frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$$

D) Coincident lines

2) Formula. n^{th} term of AP $\Rightarrow a_n = a + (n-1)d$.

10th term of AP 5, 9, 13, ...

$$a = 5 \quad d = 9 - 5 = 4 \quad n = 10$$

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

$$= 5 + (9)4$$

c) $a_{10} = 41$

3) Roots of Equation $ax^2 + bx + c = 0$.

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

4) Value of $\sin 30^\circ + \cos 60^\circ$

$$\sin(90-60) + \cos 60$$

$$\cos 60 + \cos 60$$

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

$$D) = \underline{\underline{1}}$$

Note Remember table 11.1 page 54 part 2

5) Distance between origin and point

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

$$D = \sqrt{3^2 + 4^2} = \sqrt{9 + 16}$$

$$= \sqrt{25} = \underline{\underline{5}}$$

option A) 5

6) A line passing through 2 points on the circumference of circle is B) Secant.



Tangent



Secant.

7) Total surface area of hemisphere = $3\pi r^2$
D)

[[Note Remember formulas you will get direct questions]]

8) area of circular base = 154 cm^2

$$\pi r^2 = 154 \text{ cm}^2$$

height $h = 10 \text{ cm}$.

$$\text{Volume of cylinder} = \pi r^2 h$$

$$= 154 \times 10$$

$$D) = 1540 \text{ cm}^3$$

9)

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

Refer Question ①

10)

4^{th} term = 9. d : common difference

$$a + 3d = 9.$$

$$d = 2$$

$$a + 3d - d = 9 - 2$$

$$a + 2d = 7$$

$$D) \boxed{3^{\text{rd}} \text{ term} = 7}$$

11)

$$C) \boxed{b^2 - 4ac = 0} \quad [\text{Real \& Equal Roots}]$$

$$b^2 - 4ac > 0 \quad [\text{Real \& Distinct Roots}]$$

$$b^2 - 4ac < 0 \quad [\text{Imaginary Roots}]$$

12)

B) 1

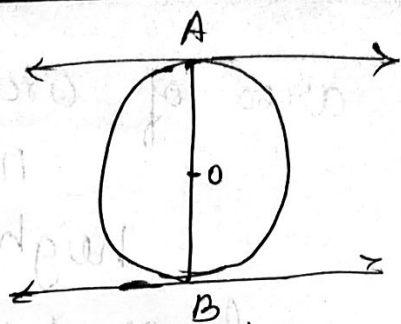
$$\sin^2 \theta + \cos^2 \theta = 1$$

13)

Section formula.

$$A) P(x, y) = \frac{m_1 x_2 + m_2 x_1}{m_1 + m_2}, \frac{m_1 y_2 + m_2 y_1}{m_1 + m_2}$$

14) BY parallel



15) BY Parallel

16) proof of Area of Similar Triangle

$$\frac{\text{ar}(\triangle ABC)}{\text{ar}(\triangle PQR)} = \left(\frac{AB}{PQ}\right)^2$$
$$= \left(\frac{1}{4}\right)^2 \Rightarrow \frac{1}{16}$$

BY 1:16

2 17) Refer question 1

parallel line $\Rightarrow \frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

$$4x + py + 8 = 0, \quad 4x + 4y + 2 = 0$$

$$\frac{4}{4} = \frac{p}{4}$$

$$p = \frac{16}{4} \quad \text{BY } \boxed{p=4}$$

22

18) Discriminant $\Delta = b^2 - 4ac$

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

$$a=1 \quad b=-5 \quad c=3$$

$$\Delta = (-5)^2 - 4(1)(3)$$

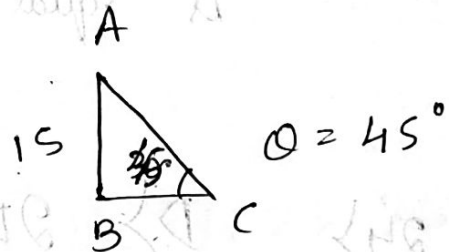
$$= 25 - 12$$

$$\text{BY } \boxed{\Delta = 13}$$

$$19 \rightarrow \frac{\sin 28}{\cos 62} \Rightarrow \frac{\sin (90 - 62)}{\cos 62} = \frac{\cos 62}{\cos 62}$$

$$B \rightarrow \underline{\underline{1}}$$

$$20 \rightarrow \tan \theta = \frac{\text{Opp}}{\text{adj}}$$



$$\tan 45 = \frac{AB}{BC} = \frac{15}{BC} \quad (\tan 45 = 1)$$

$$1 = \frac{15}{BC} \Rightarrow \boxed{BC = 15}$$

A \rightarrow

$$21 \rightarrow \text{Midpoint} = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$\begin{matrix} (6, 2) & (4, 4) \\ x_1, y_1 & x_2, y_2 \end{matrix}$$

$$\frac{6+4}{2}, \frac{2+4}{2} \Rightarrow \frac{10}{2}, \frac{6}{2}$$

$$D \rightarrow (5, 3)$$

22 \rightarrow \star

$$3 \cdot \text{Median} = \text{Mode} + 2 \cdot \text{Mean}$$

$$\text{Mean} = 3, \quad \text{Median} = 4$$

$$3(4) = \text{mode} + 2(3)$$

$$\text{mode} = 12 - 6$$

$$\boxed{\text{mode} = 6} \checkmark \checkmark$$

[No option is There]

23) ** Remember Statement of theorems and their End proof. **

c) In a right triangle Square of Hypotenuse is equal to sum of Square of other two sides.

24) D) $2\pi rh$.

25) Let the pen be x
pencil be y .

A) $4x + 5y = 25$

26) $x^2 - 25 = 0$

$$x^2 = 25$$

$$x = \pm\sqrt{25}$$

D) $x = +5$ and -5 .

27) Value of $\sin 90^\circ + \tan 45^\circ$

c) $\underline{\underline{2}}$

28) $\sec \theta = \frac{1}{\cos \theta}$ $\cos \theta$ is

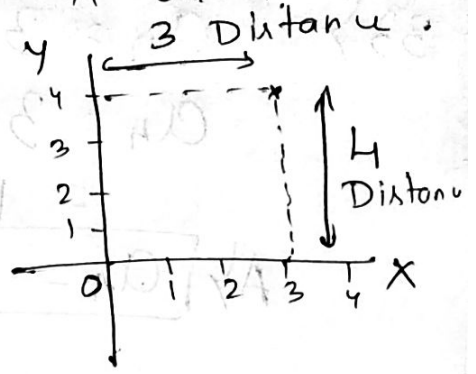
$$\boxed{\cos \theta = \frac{1}{\sec \theta}}$$

D) $\boxed{\cos \theta = \frac{1}{\sqrt{5}}}$

29) P(3, 4) Distance from X-axis

Distance from
 B) X-axis = 4.
 Y-axis = 3.

Refer graph.



30) Median of Score 15, 17, 19, 21, 23, 25

$n = 6$ Even numbers.

So we have to do average of

$\frac{n}{2}$ & $\frac{n}{2} + 1$ term

$\frac{6}{2}$ & $\frac{6}{2} + 1$

Average of 3 & 4th term

$$\text{Median} = \frac{19 + 21}{2} = \frac{40}{2} = 20$$

B) 20

31) Thales theorem Statement.

B) Same ratio.

32) Volume of cylinder = $\pi r^2 h = 300$

Volume of cone = $\frac{1}{3} \pi r^2 h$

Vol of cone = $\frac{1}{3} \times 300 = 100$

C) = 100 cm³

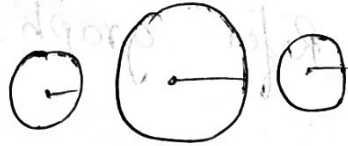
33) $a_n = 3n - 2$

$a_4 = 3(4) - 2$

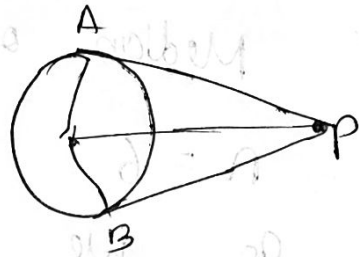
$= 12 - 2$

Ans $a_n = 10$

34) D) Circle



35) C) 2



36) By Pythagoras theorem.

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

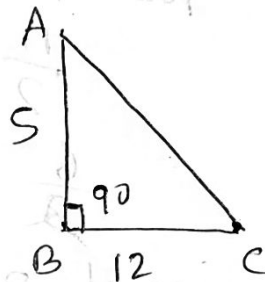
$AC^2 = 5^2 + 12^2$

$= 25 + 144$

$AC^2 = 169$

$AC = \sqrt{169} = 13$

Ans $AC = 13$



37) Ans Angle of elevation

38) Mean = $\frac{5 + 6 + 7 + 8 + 9 + 10}{6}$

$= \frac{45}{6}$

6) 45 (7.5)

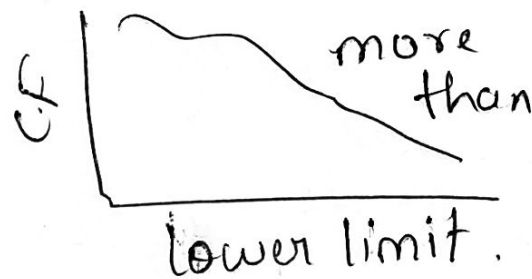
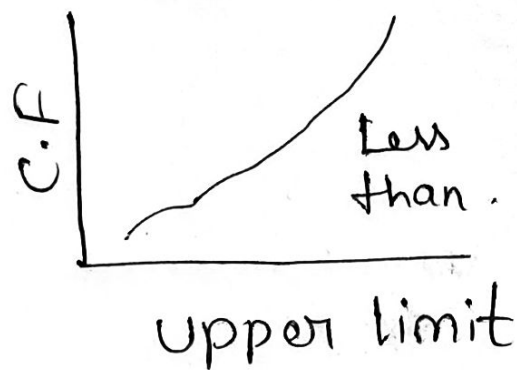
$\frac{45}{6}$
 $\frac{30}{30}$
 $\frac{15}{00}$

Mean = 7.5

[NO option is there]

39 > D > More than give.

[Refer page 105
Part - 2]



40 > D > Volume will be same.