

Question with Solutions

PART-A

1. For which value of p, (2, 2) is a solution of the equation $3x + 4y - 2p = 0$?
(A) 3 (B) 5 (C) 7 (D) 9

Sol. (C) Given equation $3x + 4y - 2P = 0$

If (2, 2) is a solution of this equation then it satisfies this equation.

$$3(2) + 4(2) - 2P = 0$$

$$2P = 14$$

$$P = 7$$

2. If the equation $3x + y + 1 = 0$ and $rx + sy + 7 = 0$ are inconsistent, then what is $r : s$?
(A) 3 : 1 (B) 1 : 3 (C) 5 : 1 (D) 1 : 5

Sol. (A) $3x + y + 1 = 0$

$$rx + sy + 7 = 0$$

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

$$\frac{3}{r} = \frac{1}{s}$$

$$\frac{r}{s} = \frac{3}{1}$$

3. What is the value of the determinant $\begin{vmatrix} 5 & 4 \\ 3 & 4 \end{vmatrix}$?

(A) 8 (B) 10 (C) 12 (D) 14

Sol. (A)

$$\begin{vmatrix} 5 & 4 \\ 3 & 4 \end{vmatrix}$$

$$= 5 \times 4 - 3 \times 4$$

$$20 - 12 = 8$$

4. Which of the following points does not lie on the graph of the equation $3x - 2y + 4 = 0$?
(A) (2, 5) (B) (1, 2) (C) (4, 8) (D) (-2, -1)

Sol. (B) Given equation is $3x - 2y + 4 = 0$

For point (2, 5)

$$3(2) - 2(5) + 4$$

$$6 - 10 + 4$$

$$= 0 \text{ (lie on the equation)}$$

For point (1, 2)

$$3(1) - 2(2) + 4$$

$$3 - 4 + 4 = 3 \text{ (does not lie)}$$

For point (4, 8)

$$3(4) - 2(8) + 4 = 0 \text{ (lie)}$$

For point (-2, -1)

$$3(-2) - 2(-1) + 4 = 0 \text{ (lie)}$$

Answer is (1, 2)

5. The graph of which of the following equations is parallel to the graph of $3x - y = 2$?

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

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

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

(D) $6x + 2y = -4$

Sol. (C) $3x - y = 2$

$$\text{Slope} = -\frac{3}{(-1)} = 3$$

$$\text{For option (A) slope} = \frac{-3}{1}$$

$$\text{For option (B) slope} = \frac{-2}{(-3)} = \frac{2}{3}$$

$$\text{For option (C) slope} = \frac{-6}{(-2)} = 3$$

$$\text{For option (D) slope} = -\frac{6}{2} = -3$$

Hence option (C) is correct.

6. The sum of a number and its reciprocal is 3. If the number is x , then which of the following is the quadratic equation containing x ?

(A) $x^2 - 3x + 2 = 0$

(B) $x^2 + 3x + 1 = 0$

(C) $x^2 - 3x + 1 = 0$

(D) $x^2 + 3x + 2 = 0$

Sol. (C) ATQ

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

$$x^2 + 1 = 3x$$

$$x^2 - 3x + 1 = 0$$

7. Which of the following being taken for p , the roots of the equation $x^2 + px + 1 = 0$ will be real and equal ?

(A) 2

(B) 2.5

(C) 4

(D) 8

Sol. (A) For real roots $D = 0$

$$b^2 - 4ac = 0$$

$$p^2 - 4(1)(1) = 0$$

$$p^2 = 4$$

$$p = \pm 2$$

Hence option (A) is correct.

8. If one of the roots of the quadratic equation $x^2 + x + k = 0$ is -2 , then what is the value of k ?

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

Sol. (B) If -2 is a root of this equation then

$$(-2)^2 + (-2) + k = 0$$

$$4 - 2 + k = 0$$

$$k = -2$$

9. Which of the following quadratic equations has the sum of the roots as 2 and product of the roots as -3 ?

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

Sol. (A) equation is

$$x^2 - x (\text{sum of roots}) + (\text{product of roots}) = 0$$

$$x^2 - x(2) + (-3) = 0$$

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

10. In an AP, t_8 is more than t_3 by 25. What is the common difference of the AP ?

- (A) 5 (B) 4 (C) 2 (D) 1

Sol. (A) $t_8 = t_3 + 25$

$$a + 7d = a + 2d + 25$$

$$5d = 25$$

$$d = 5$$

11. What is the common difference of an AP of which $t_n = 5n + 1$?

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

Sol. (B) $t_n = 5n + 1$

$$t_1 = 6$$

$$t_2 = 11$$

$$\text{common difference} = t_2 - t_1 = 11 - 6 = 5$$

12. Which of the following sequences is not an AP ?

- (A) 1, 3, 5, 7, 9,..... (B) 0, -2 , -4 , -6 ,.....
(C) -7 , -5 , -2 , -1 , 1, 3,..... (D) -6 , -4 , -2 , 2, 3, 4,.....

Sol. (D) in option (D) $-6, -4, -2, 2, 3, 4 \dots$

Difference between consecutive terms is not same. so this is not an A.P.

13. In an AP, $S_n = n^2$, what is t_n ?

- (A) $2n$ (B) $2n - 1$ (C) $2n + 1$ (D) $2n + 3$

Sol. (B) $S_n = n^2$

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

$$2a + (n-1)d = 2n \quad (1)$$

$$\text{If } n = 1 \text{ then } S_1 = a = 1 \quad (2)$$

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

from eq. (1) & (2)

$$T_n = 2n - 1$$

14. What is the middle of the scores in a data arranged in ascending or descending order known as ?

- (A) Deviation (B) Mode (C) Mean (D) Median

Sol. (D) Median

15. If M is the mean of the scores $x_1, x_2, x_3, \dots, x_n$, then what is the mean of the scores $ax_1, ax_2, ax_3, \dots, ax_n$ (When $a \neq 0$)

- (A) M (B) $M + a$ (C) aM (D) $M - a$

Sol. (C) $\frac{x_1 + x_2 + x_3 + \dots + x_n}{n} = M$

$$x_1 + x_2 + \dots + x_n = nM \quad (1)$$

$$\text{required mean} = \frac{ax_1 + ax_2 + \dots + ax_n}{n} = \frac{a \times nM}{n} = aM$$

16. What is the mean of the first 20 positive even numbers ?

- (A) 20 (B) 21 (C) 22 (D) 24

Sol. (B) First 20 positive even integers 2, 4, 6, ..., 40

$$\text{Mean} = \frac{2 + 4 + \dots + 40}{20} = \frac{2 \times (1 + 2 + \dots + 20)}{20} = \frac{2 \times 20 \times 21}{20 \times 2} = 21$$

17. What is the median of the data given below ?

7, 12, 15, 6, 20

- (A) 12 (B) 10 (C) 7 (D) 8

Sol. (A) Given observation 7, 12, 15, 6, 20

$$\Rightarrow 6, 7, 12, 15, 20$$

number of observations = 5

$$\text{Median} = \left(\frac{n+1}{2}\right)^{\text{th}} \text{ obs} = \left(\frac{5+1}{2}\right)^{\text{th}} = 3^{\text{rd}} \text{ obs}$$

$$\text{Median} = 12$$

18. If a ludo-dice is rolled once, then what is the probability of getting 5 or less than that ?

- (A) $\frac{3}{6}$ (B) $\frac{5}{6}$ (C) $\frac{6}{6}$ (D) $\frac{2}{3}$

Sol. (B) $S = \{1, 2, 3, 4, 5, 6\}$

$$\text{required probability} = \frac{5}{6}$$

19. Two coins are tossed once. What is the probability of getting at least two T's ?

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

Sol. (A) $S = \{HH, HT, TH, TT\}$

For at least two T's = $\{TT\}$

$$\text{required probability} = \frac{1}{4}$$

20. A child is chosen at random from a group containing of 4 girls and 6 boys. What is the probability of the child being a girl ?
 (A) $\frac{1}{4}$ (B) $\frac{2}{3}$ (C) $\frac{2}{5}$ (D) $\frac{3}{4}$

Sol. (C) Total girls = 4
 Total boys = 6
 Total children = 10

$$\text{required probability} = \frac{4}{10} = \frac{2}{5}$$

21. Rose flowers of equal size are contained in a bag and of those 5 are red, 3 are white and 2 are yellow. If one is taken out from the bag at random, what is the probability of getting a red rose ?
 (A) $\frac{1}{3}$ (B) $\frac{1}{5}$ (C) $\frac{3}{10}$ (D) $\frac{1}{2}$

Sol. Red = 5
 White = 3
 Yellow = 2
 Total flowers = 10

$$\text{required probability} = \frac{5}{10} = \frac{1}{2}$$

22. If the coordinates of three vertices of an triangle are (0, 0), (1, 0) and (0, 1), then what is the area of the triangle in square unit ?
 (A) 1 (B) $\frac{1}{2}$ (C) $\frac{1}{3}$ (D) $\frac{1}{4}$

Sol. (B) Area of $\Delta = \frac{1}{2}|x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)|$
 $= \frac{1}{2}|0(0 - 1) + 1(1 - 0) + 0(0 - 0)|$
 $= \frac{1}{2}|1| = \frac{1}{2}$

23. The distance between two points M and N is 5 units. If the ordered pair of M is (3, 1) and N lies in the y-axis. What is the ordered pair of N ?
 (A) (4, 0) (B) (0, 4) (C) (5, 0) (D) (0, 5)

Sol. (D) Let co-ordinate of point N is (0, y)

$$\text{ATQ } \sqrt{(0 - 3)^2 + (y - 1)^2} = 5^2$$

$$9 + (y - 1)^2 = 25$$

$$(y - 1)^2 = 16$$

$$y - 1 = \pm 4$$

$$y = 5 \text{ or } -3$$

Hence point (0, 5)

24. The origin is the mid point of a line segment and (2, 3) is one of its end point, then which of the following represents the ordered pair of the other end point ?
- (A) $\left(\frac{1}{2}, \frac{3}{2}\right)$ (B) (-2, 3) (C) (2, -3) (D) (-2, -3)

Sol. (D) Let another ordered pairs is (x, y)
(a, 0) is mid point hence

$$\frac{x+2}{2} = 0 \quad \& \quad \frac{y+3}{2} = 0$$

$$x = -2 \quad y = -3$$

point is (-2, -3)

25. The coordinates of two points A and b are (a, b) and (a, -b) respectively. What is the distance between them ?
- (A) 2a (B) 2b (C) $\sqrt{a^2 + b^2}$ (D) $2\sqrt{a^2 + b^2}$

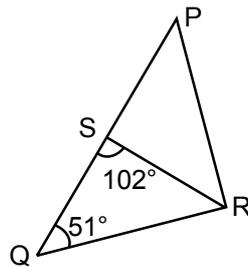
Sol. (B) distance = $\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$
= $\sqrt{(a - a)^2 + (b - (-b))^2} = \sqrt{4b^2} = 2b$

26. If the ratios of the areas of two equilateral triangles is 16 : 25, then what is the ratio of the lengths of the corresponding sides of the same two triangles ?
- (A) 3 : 4 (B) 6 : 5 (C) 5 : 6 (D) 4 : 5

Sol. (D) $\frac{\text{Area of 1st triangle}}{\text{Area of 2nd triangle}} = \left(\frac{\text{side of 1st triangle}}{\text{side of 2nd triangle}}\right)^2$

$$\text{ratio of sides of triangles} = \sqrt{\frac{16}{25}} = \frac{4}{5}$$

27. In the given figure, $m\angle Q = 51^\circ$, $m\angle QSR = 102^\circ$ and $\Delta SQR = \Delta RQP$. What is $m\angle PRS$?



- (A) 65° (B) 70° (C) 75° (D) 80°
- Sol.** (C) $\Delta SQR \sim \Delta RQP$

$$\angle SQR = \angle RQP = 51^\circ$$

$$\angle QRS = \angle QPR = 180^\circ - (102 + 51^\circ) = 27^\circ$$

$$\angle RSQ = \angle PRQ = 102^\circ$$

$$\text{Now } \angle PRS = \angle PRQ - \angle SRQ$$

$$= 102^\circ - 27^\circ = 75^\circ$$

28. In $\triangle ABC$ and $\triangle DEF$ if $m\angle A = m\angle D$, $m\angle B = m\angle E$. $AB = 2$ cm, $BC = 3$ cm and $DE = 6$ cm, then what is EF in cm ?
 (A) 9 (B) 7 (C) 5 (D) 3

Sol. In $\triangle ABC$ & $\triangle DEF$

$$\angle A = \angle D$$

$$\angle B = \angle E$$

so by AA similarity

$$\triangle ABC \sim \triangle DEF$$

$$\text{so } \frac{AB}{DE} = \frac{BC}{EF}$$

$$\frac{2}{6} = \frac{3}{EF}$$

$$EF = 9 \text{ cm}$$

29. In $\triangle DEF$, $DE = 3$ cm, $EF = 4$ cm and in $\triangle PQR$, $PQ = 9$ cm. If triangles $\triangle DEF$ and $\triangle PQR$ are similar, then what is QR in cm ?

- (A) 13 (B) 14 (C) 12 (D) 16

Sol. (C) $\triangle DEF \sim \triangle PQR$

$$\frac{DE}{PQ} = \frac{EF}{QR}$$

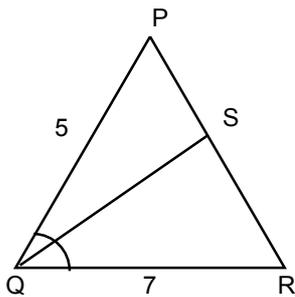
$$\frac{3}{9} = \frac{4}{QR}$$

$$QR = 12 \text{ cm}$$

30. In $\triangle PQR$, the bisector of $\angle PQR$ intersects PR at the point S . If $PQ = 5$ cm and $QR = 7$ cm, then what is $PS : PR$?

- (A) 5 : 12 (B) 12 : 5 (C) 8 : 12 (D) 12 : 8

Sol. (A)



by internal bisector theorem

$$\frac{PQ}{QR} = \frac{PS}{SR}$$

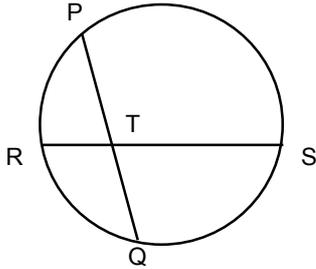
$$\frac{5}{7} = \frac{PS}{SR} \text{ ---(1)}$$

Now $\frac{PS}{PR} = \frac{PS}{PS+SR}$ from equ.(1)

$$= \frac{PS}{PS + \frac{7}{5}PS} = \frac{5PS}{12PS} = \frac{5}{12}$$

31. Two chords \overline{PQ} and \overline{RS} of a circle intersect each other at T. If $RT = 4$ cm, $ST = 3$ cm, $QT = 6$ cm, what is PT in cm ?
- (A) 1 (B) 2 (C) 3 (D) 4

Sol. (B)

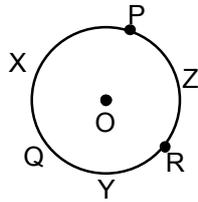


$$\therefore RT \times TS = TP \times PQ$$

$$4 \times 3 = PT \times 6$$

$$PT = 2 \text{ cm}$$

32. In the given diagram 'O' is the centre the circle PQR. If $m\widehat{QRP} = 230^\circ$, how much is $m\angle PXQ$?



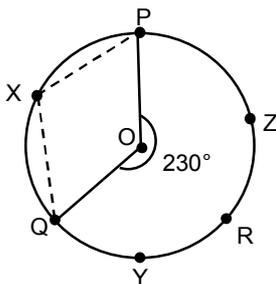
(A) 140°

(B) 115°

(C) 105°

(D) 100°

Sol. (B)

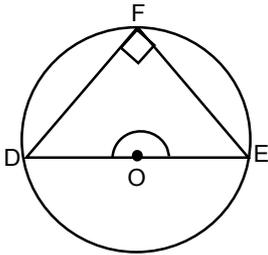


$$\angle P \times Q = \frac{1}{2} \widehat{PRQ}$$

$$= \frac{1}{2} \times 230^\circ = 115^\circ$$

33. \overline{DE} is a diameter in the circle DEF. How much is $m\widehat{DFE}$?
 (A) 180° (B) 135° (C) 120° (D) 115°

Sol. (A)



DE is a diameter hence

$$\angle DFE = \angle DOE = 180^\circ$$

34. What is the relation between the degree unit and radian unit used for measuring an angle ?

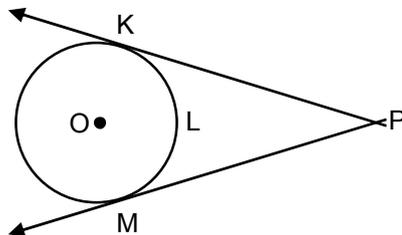
- (A) $\frac{\pi}{3}$ radian = 40° (B) $\frac{2\pi}{3}$ radian = 100°
 (C) $\frac{\pi}{2}$ radian = 90° (D) π radian = 120°

Sol. (C) in option (C)

$$\frac{\pi}{2} \times \frac{180^\circ}{\pi} = 90^\circ$$

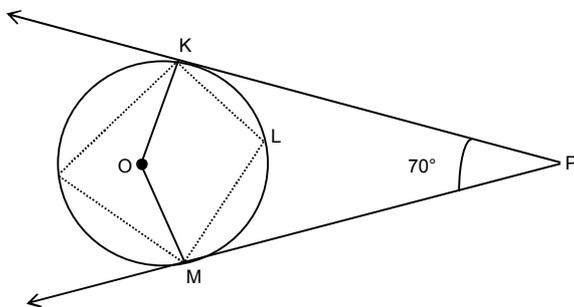
so option (C) is correct.

35. In the given diagram, O is the centre of the circle KLM and K, M are the points of contacts of the tangents drawn to the circle from P. If $m\angle KPM = 70^\circ$, what is $m\widehat{KLM}$ equal to ?



- (A) 140° (B) 120° (C) 110° (D) 100°

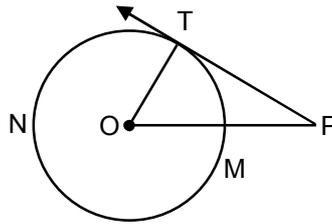
Sol. (C)



$$\therefore \angle KOM + \angle KPM = 180^\circ$$

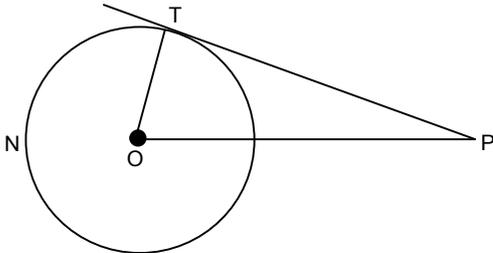
$$\angle KOM = 180^\circ - 70^\circ = 110^\circ$$

36. In the given figure, 'O' is the centre of the circle NMT. \overline{PT} is a tangent to the circle at T. If $PT = 40$ cm, $OP = 41$ cm, then what is the length of \overline{OT} in cm ?



- (A) 9 (B) 12 (C) 13 (D) 24.5

Sol. (A) Given : $PT = 40$ cm



$$OP = 41 \text{ cm}$$

$$OT = ?$$

In $\triangle OTP$

$$\angle OTP = 90^\circ$$

$$OT^2 + TP^2 = OP^2$$

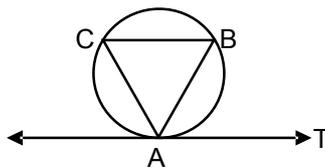
$$\Rightarrow OT^2 + (40)^2 = (41)^2$$

$$\Rightarrow OT^2 = 41^2 - 40^2$$

$$OT^2 = 81$$

$$OT = 9 \text{ cm}$$

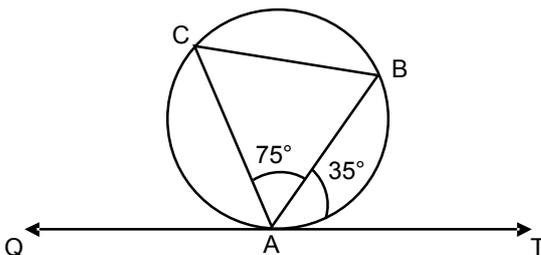
37. In the given figure \overleftrightarrow{TA} is a tangent to the circle ABC at A. If $m\angle CAB = 75^\circ$ and $m\angle TAB = 35^\circ$, then what is $m\angle ABC$?



- (A) 55° (B) 60° (C) 70° (D) 50°

Sol. (C) Given : $\angle CAB = 75^\circ$

$$\angle TAB = 35^\circ$$

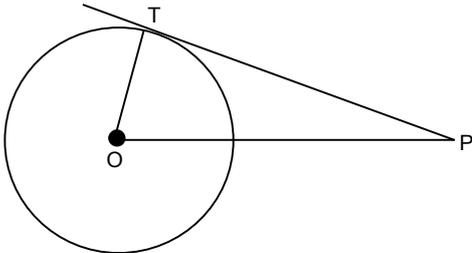


$\angle CAQ + \angle CAB + \angle BAT = 180^\circ$ (Linear pair)
 $\angle CAQ = 180^\circ (75 + 35^\circ) = 180^\circ - 110^\circ = 70^\circ$
 $\angle CAQ = \angle ABC = 70^\circ$ (alternate interior angle segment theorem)

38. O is the centre of a circle and P is an exterior point in the plane of the circle. If \overline{PT} is a tangent segment to the circle, then how much is $m\angle TOP + m\angle TPO$?

- (A) 30° (B) 45° (C) 60° (D) 90°

Sol. (D) $\because \angle OTP = 90^\circ$ (radius in perpendicular to tangent)



In $\angle OPT$
 $\angle OTP + \angle TOP + \angle TPO = 180^\circ$ (Angle sum property)
 $\therefore \angle TOP + \angle TPO = 180^\circ - 90^\circ = 90^\circ$

39. What is the number of direct common tangents of two internally tangent circles ?

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

Sol. (C) only one

40. The difference of the circumference of two concentric circles is 88 cm. What is the width of the concerned circular annulus ?

- (A) 7 (B) 14 (C) 21 (D) 42

Sol. (B) Let the radii be r_1 & r_2 cm

then $2\pi r_1 - 2\pi r_2 = 88$

$2\pi (r_1 - r_2) = 88$

$r_1 - r_2 = \frac{88 \times 7}{2 \times 22} = 14$ cm

width = 14 cm

41. The area of a sector is $\frac{11}{20}$ th of the area of the corresponding circle, what is the degree measures of the arc of the sector ?

- (A) 60° (B) 120° (C) 189° (D) 198°

Sol. (D) Let area of circle = πr^2

Area of sector = $\frac{\theta}{360} \pi r^2$

ATP

$$\frac{\theta}{360} \pi r^2 = \frac{11}{20} \pi r^2$$

$$\theta = \frac{360 \times 11}{20} = 18^\circ \times 11 = 198^\circ$$

42. The volume of a prism is $84\sqrt{3}$ cubic cm and the height of the prism is 7 cm. If the base of the prism is an equilateral triangle, then what is the length, in cm, of each side of its base ?

(A) $7\sqrt{3}$ (B) $6\sqrt{3}$ (C) $5\sqrt{3}$ (D) $4\sqrt{3}$

Sol. (D) Volume of prism = $84\sqrt{3}$ cm³

height of prism = 7 cm

let side of base = a cm

Volume of prism = Area of triangular base \times height

$$84\sqrt{3} = \frac{\sqrt{3}}{4} a^2 \times 7 \Rightarrow a = 4\sqrt{3}$$

43. What is the volume, in cubic cm, of a cone with 6 cm as radius of the base and 7 cm as height ?

(A) $\frac{240}{3}\pi$ (B) $\frac{250}{3}\pi$ (C) 84π (D) 87π

Sol. (C) Given radius of cone r = 6 cm

height h = 7 cm

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

$$= \frac{1}{3} \times \pi \times 6 \times 6 \times 7$$

$$= \frac{1}{3} \times \pi \times 36 \times 7$$

$$= 84\pi \text{ cm}^3$$

44. The inner radius and height of an open cylindrical vessel are $2\frac{1}{3}$ cm and 9 cm respectively. What is the greatest number of cubic cm of liquid it can hold ?

(A) 142 (B) 145 (C) 154 (D) 156

Sol. (C) Radius of cylinder = $2\frac{1}{3} = \frac{7}{3}$ cm

height of cylinder = 9 cm

Volume of cylinder = $\pi r^2 h$

$$= \frac{22}{7} \times \frac{7}{3} \times \frac{7}{3} \times 9$$

$$= 154 \text{ cm}^3$$

45. What is the value of $\cos(A + B) + \cos(A - B)$?
 (A) $2 \sin A \cos B$ (B) $2 \cos A \sin B$
 (C) $2 \cos A \cos B$ (D) $2 \sin A \sin B$.

Sol. (C) $\cos(A + B) + \cos(A - B)$

$$\Rightarrow \cos A \cos B - \sin A \sin B + \cos A \cos B + \sin A \sin B$$

$$\Rightarrow 2 \cos A \cos B$$

46. Which of the following is equal to $\cot 80^\circ \times \cot 70^\circ \times \cot 60^\circ \times \dots \times \cot 10^\circ$?
 (A) 0 (B) 1 (C) $\sqrt{2}$ (D) $\sqrt{3}$

Sol. (B) $\cot 80^\circ \times \cot 70^\circ \times \cot 60^\circ \dots \times \cot 10^\circ$

$$\cot 80^\circ \times \cot(90 - 80) \times \cot(70) \cot(90 - 70)$$

$$\cot 80^\circ \times \tan 80^\circ \times \cot 70^\circ \tan 70^\circ \times \cot 60^\circ \tan 60^\circ \times \cot 50^\circ \times \tan 50^\circ$$

$$\because \cot \theta \times \tan \theta = 1$$

$$= 1$$

47. In $\triangle LMN$, $\sin(L + M) = 1$. What is $m\angle N$ equal to ?
 (A) 60° (B) 90° (C) 120° (D) 135°

Sol. (B) $\sin(L + M) = 1$

$$\sin(L + M) = \sin 90^\circ$$

$$\Rightarrow L + M = 90^\circ$$

$$\text{by angle sum property } \angle N = 180 - 90 = 90^\circ$$

48. If $\cot \theta = \frac{p}{q}$, then what is the value of $\operatorname{cosec}^2 \theta$?

- (A) $\frac{p^2 - q^2}{q^2}$ (B) $\frac{p^2 + q^2}{q^2}$ (C) $\frac{q^2}{p^2 - q^2}$ (D) $\frac{q^2}{p^2 + q^2}$

Sol. (B) $\cot \theta = \frac{p}{q}$

$$\because 1 + \cot^2 \theta = \operatorname{cosec}^2 \theta$$

$$1 + \frac{p^2}{q^2} = \operatorname{cosec}^2 \theta$$

$$\Rightarrow \operatorname{cosec}^2 \theta = \frac{p^2 + q^2}{q^2}$$

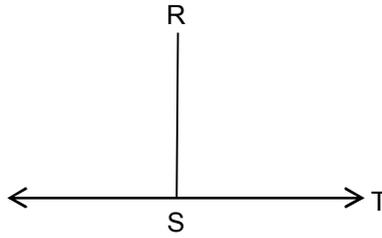
49. If $A + B + C = 90^\circ$, then what is the value of $\cos(A + C)$?
 (A) $-\cos B$ (B) $\cos B$ (C) $-\sin B$ (D) $\sin B$

Sol. (D) Given $A + B + C = 90^\circ$

$$\cos(A + C) \Rightarrow \cos(90 - B) \{ \because \cos(90 - \theta) = \sin \theta \}$$

$$\Rightarrow \sin B$$

50. In the given diagram $\overline{RS} \perp \overleftrightarrow{ST}$ $\cdot \overleftrightarrow{ST}$ represents a horizontal plane and \overline{RS} represents a pole. If the distance of T from S is K metre and a man at R sees the point T at an angle of depression of 30° , then what is the length of the pole \overline{RS} in metre ?



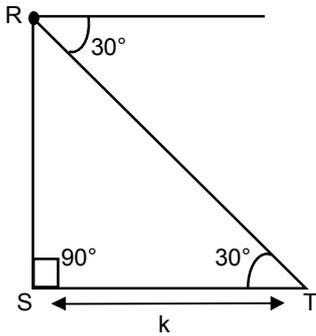
(A) $\sqrt{3} K$

(B) $\frac{K}{\sqrt{3}}$

(C) $\sqrt{2} K$

(D) $\frac{K}{\sqrt{2}}$

Sol. In $\triangle RST$



$$\tan 30^\circ = \frac{RS}{ST}$$

$$\frac{1}{\sqrt{3}} = \frac{RS}{k}$$

$$\Rightarrow RS = \frac{k}{\sqrt{3}}$$
