Board Paper of Class 10 Maths (Basic) Term-I 2021 Delhi(Set 4) - Solutions

Total Time: 90

Total Marks: 40.0

Section A

Solution 1

92 = 23 × 2 × 2 = 23 × 2^2
152 = 19 × 2 × 2 × 2 = 19 × 2^3

So, HCF(92, 152) = 2^2 = 4

Hence, the correct answer is option (a).

Solution 2

In ΔABC, DE || BC

$$\frac{\text{AD}}{\text{DB}} = \frac{\text{AE}}{\text{EC}} \quad \text{(Basic proportional Theroem)}$$

$$\Rightarrow \frac{4}{6} = \frac{5}{\text{EC}}$$

$$\Rightarrow \text{EC} = \frac{6}{4} \times 5$$

$$\Rightarrow \text{EC} = 7.5 \text{ cm}$$

Hence, the correct answer is option (c).

Solution 3

Since, the pair of linear equations have no solution therefore, the lines are parallel.
So,

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

Here, a_1 = 1, b_1 = 1, c_1 = −4 and a_2 = 2, b_2 = k, c_2 = −3 therefore,

$$\frac{1}{2} = \frac{1}{k} \neq \frac{-4}{-3}$$

$$\Rightarrow k = 2$$

Hence, the correct answer is option (b).

Solution 4

Since, tan 45º = 1 and cos 60º = $\frac{1}{2}$ therefore,

$$\begin{aligned}\tan^2 45^\circ - \cos^2 60^\circ &= 1^2 - \left(\frac{1}{2}\right)^2 \\ &= 1 - \frac{1}{4} \\ &= \frac{3}{4}\end{aligned}$$

Hence, the correct answer is option (d).

Solution 5

Since, the point (x, 1) is equidistant from the points (0, 0) and (2, 0) therefore, the distance between them will be equal.
Distance between two points P(x_1, y_1) and P(x_2, y_2) is given by $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$.
Therefore,

$$\sqrt{(0-x)^2 + (0-1)^2} = \sqrt{(2-x)^2 + (0-1)^2}$$

$$\Rightarrow x^2 + 1 = 4 + x^2 - 4x + 1$$

$$\Rightarrow 4x = 4$$

$$\Rightarrow x = 1$$

Hence, the correct answer is option (a).

Solution 6

When n coins are tossed simultaneously, the number of outcomes = 2^n.
So, when 2 coins are tossed simultaneously, the number of outcomes = 2^2 = 4.
Outcomes are HH, HT, TH, TT.
Outcomes for exactly one head = (HT, TH)
Number of favourable outcomes = 2

Now,

$$\text{Probability of an event} = \frac{\text{Number of favourable outcomes}}{\text{Total number of outcomes}}$$

$$\Rightarrow \text{P (Exactly one head)} = \frac{2}{4} = \frac{1}{2}$$

Hence, the correct answer is option (b).

Solution 7

Given: length of arc = 22 cm, radius *r* = 21 cm
Now,
Length of an arc of a sector of angle θ = $\frac{\theta}{360^\circ} \times 2\pi r$

$$\Rightarrow 22 = \frac{\theta}{360^\circ} \times 2 \times \frac{22}{7} \times 21$$

$$\Rightarrow 1 = \frac{\theta}{360^\circ} \times 6$$

$$\Rightarrow \theta = \frac{360^\circ}{6} = 60^\circ$$

Hence, the correct answer is option (c).

Solution 8

Given that the sum of the zeroes is 5 and the product of the zeroes is 0.
Let the zeroes of the polynomial be α and β.

For the polynomial $ax^2 + bx + c$,

$$\Rightarrow \alpha + \beta = \frac{-b}{a} \text{ and } \alpha\beta = \frac{c}{a}$$

$$\Rightarrow \frac{-b}{a} = 5 \text{ and } \frac{c}{a} = 0$$

$$\Rightarrow c = 0 \text{ and } b = -5a$$

$$\therefore ax^2 + bx + c = ax^2 - 5ax$$

$$= ax\left(x - 5\right)$$

The only option of this form is $2x\left(x - 5\right)$, where *a* = 2.

Hence, the correct answer is option (b).

Solution 9

The sum of the probability of an event and its complement is 1.

$$\Rightarrow \mathrm{P}\left(\mathrm{E}\right) + \mathrm{P}\left(\overline{\mathrm{E}}\right) = 1$$

Here, $\mathrm{P}\left(\mathrm{E}\right) = 0.65$.

$$\Rightarrow 0.65 + \mathrm{P}\left(\overline{\mathrm{E}}\right) = 1$$

$$\Rightarrow \mathrm{P}\left(\overline{\mathrm{E}}\right) = 1 - 0.65$$

$$\Rightarrow \mathrm{P}\left(\overline{\mathrm{E}}\right) = 0.35$$

Hence, the correct answer is option (d).

Solution 10

Given that ΔDEF ~ ΔPQR and $\frac{\mathrm{EF}}{\mathrm{QR}}=\frac{3}{2}$.

Since the two triangles are similar. Therefore, the ratio of the areas of the two triangles is equal to the ratio of the square of their corresponding sides.

$\Rightarrow \frac{\mathrm{ar(DEF)}}{\mathrm{ar(PQR)}}=\left(\frac{\mathrm{EF}}{\mathrm{QR}}\right)$

$\Rightarrow \frac{\mathrm{ar(DEF)}}{\mathrm{ar(PQR)}}=\left(\frac{3}{2}\right)^2$

$\Rightarrow \frac{\mathrm{ar(DEF)}}{\mathrm{ar(PQR)}}=\frac{9}{4}$

Thus, ar(DEF) : ar(PQR) = 9 : 4.

Hence, the correct answer is option (d).

Solution 11

$$\begin{aligned} x^2-5x+6 &= x^2-3x-2x+6 \\ &= x(x-3)-2(x-3) \\ &= (x-3)(x-2) \end{aligned}$$

For zeroes of a polynomial, we put polynomial equals to 0.

$\Rightarrow (x-3)(x-2)=0$

$\Rightarrow x-3=0 \text{ or } x-2=0$

$\Rightarrow x=3 \text{ or } x=2$

Hence, the correct answer is option (c).

Solution 12

$$\begin{aligned} \frac{57}{300} &= \frac{57}{3\times100} \\ &= \frac{19}{100} \\ &= 0.19 \end{aligned}$$

Thus, $\frac{57}{300}$ is a terminating decimal expansion after 2 places of decimals.

Hence, the correct answer is option (b).

Solution 13

The length (*l*) of the rectangle is 4 cm more than twice its breadth (*b*).

$\Rightarrow l=2b+4$

The perimeter of a rectangle of length *a* units and breadth *b* units is given by 2(*a* + *b*).
Since the perimeter of the rectangle is 14 cm,
$\Rightarrow 2\left(l+b\right)=14$

Hence, the correct answer is option (d).

Solution 14

The given number $5.\overline{213}$ is a non-terminating and repeating decimal.
The bar over 213 represents that it keeps repeating indefinitely.
$\therefore 5.\overline{213}$ = 5.213213213...

Hence, the correct answer is option (a).

Solution 15

The point which divides the line segment joining the points $\left(x_1,\ y_1\right)$ and $\left(x_2,\ y_2\right)$ in the ratio *m* : *n* is given by $\left(\frac{mx_2+nx_1}{m+n},\ \frac{my_2+ny_1}{m+n}\right)$.

Let the point (4, 0) divide the line segment joining the points (4, 6) and (4, −8) in the ratio *k* : 1.
Coordinates of point of division: $\left(\frac{4k+4}{k+1},\frac{-8k+6}{k+1}\right)=\left(4,\frac{-8k+6}{k+1}\right)$

$\therefore \frac{-8k+6}{k+1}=0$
$\Rightarrow -8k+6=0$
$\Rightarrow -8k=-6$
$\Rightarrow k=\frac{6}{8}$
$\Rightarrow k=\frac{3}{4}$

Thus, the point (4, 0) divides the line segment joining the points (4, 6) and (4, −8) in the ratio 3 : 4.

Hence, the correct answer is option (b).

Solution 16

Since sin90° = 1 and cos90° = 0,
$\tan 90^\circ = \frac{\sin 90^\circ}{\cos 90^\circ}$
$= \frac{1}{0}$
$=$undefined

Hence, the correct answer is option (c).

Solution 17

AO, OB, and OC represent the radius of the semi-circle.
In the given figure, the inner circle touches a semi-circle at C and O. Thus, OC is the diameter of the inner circle.

$$\therefore \text{OC} = \frac{\text{AB}}{2}$$
$$= \frac{28}{2}$$
$$= 14 \text{ cm}$$

$$\text{Radius of inner circle} = \frac{\text{Diameter}}{2}$$
$$= \frac{\text{OC}}{2}$$
$$= \frac{14}{2}$$
$$= 7 \text{ cm}$$

Hence, the correct answer is option (c).

Solution 18

The mid-point of any two points (x_1, y_1) and (x_2, y_2) is given by $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$.

Since D is the median of OB,

$$\therefore \text{D} = \left(\frac{0+0}{2}, \frac{0+6}{2}\right)$$
$$= (0, 3)$$

Distance between two points (x_1, y_1) and (x_2, y_2) is calculated by $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$.

$$\therefore \text{AD} = \sqrt{(0-4)^2 + (3-0)^2}$$
$$= \sqrt{16+9}$$
$$= \sqrt{25}$$
$$= 5 \text{ units}$$

Hence, the correct answer is option (b).

Solution 19

The sum of all angles in a triangle is 180°.

∴ In ΔPQR,

$$\angle P + \angle Q + \angle R = 180^\circ$$
$$\Rightarrow 45^\circ + 90^\circ + \angle R = 180^\circ$$
$$\Rightarrow \angle R = 45^\circ$$

Substitute $\angle Q = 45^\circ$ and $\angle R = 45^\circ$ in $\tan P - \cos^2 R$.

$$\begin{aligned} \tan P - \cos^2 R &= \tan 45^\circ - \cos^2 45^\circ \\ &= 1 - \left(\frac{1}{\sqrt{2}}\right)^2 \qquad \left(\because \tan 45^\circ = 1 \text{ and } \cos 45^\circ = \frac{1}{\sqrt{2}}\right) \\ &= 1 - \frac{1}{2} \\ &= \frac{1}{2} \end{aligned}$$

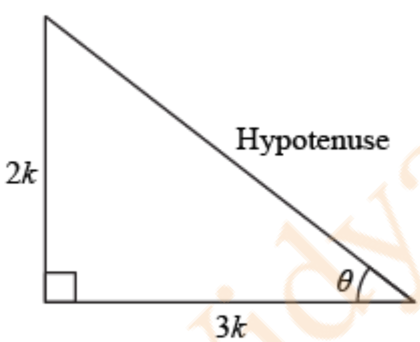
Hence, the correct answer is option (c).

Solution 20

Since $\tan\theta = \frac{\text{Perpendicular}}{\text{Base}}$,

$$\Rightarrow \frac{\text{Perpendicular}}{\text{Base}} = \frac{2}{3}$$

Thus, consider the perpendicular and base length of the triangle as $2k$ and $3k$ respectively.



$$\begin{aligned} \therefore \text{Hypotenuse} &= \sqrt{(2k)^2 + (3k)^2} \\ &= \sqrt{4k^2 + 9k^2} \\ &= \sqrt{13}k \end{aligned}$$

Now, $\sec\theta = \frac{\text{Hypotenuse}}{\text{Base}}$

$$\begin{aligned} \sec\theta &= \frac{\sqrt{13}k}{3k} \\ &= \frac{\sqrt{13}}{3} \end{aligned}$$

Hence, the correct answer is option (a).

Section B

Solution 21

Given: θ = 45° and radius (r) = 14 cm
Length of arc subtended by angle 45° = $\frac{\theta}{360^\circ} \times 2\pi r = \frac{45^\circ}{360^\circ} \times 2\pi r$
∴ Total perimeter of the sector = $2r + \frac{45^\circ}{360^\circ} \times 2\pi r$

$$\Rightarrow \text{Total perimeter} = 2 \times 14 + \frac{1}{8} \times 2 \times \frac{22}{7} \times 14$$

$$= 28 + 11$$

$$= 39 \text{ cm}$$

Hence, the correct answer is option (d).

Solution 22

If the probability of an event E is P(E), then

$$\mathrm{P}\left(\mathrm{E}\right) = \frac{\text{Number of trials in which event happened}}{\text{Total number of trials}}$$

Total number of balls = 16 + 8 + 6 = 30
Let the probability that the ball is blue be P(Blue).

$$\therefore \mathrm{P}\ (\text{Blue}) = \frac{\text{Number of blue balls}}{\text{Total number of balls}}$$

$$= \frac{6}{30}$$

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

Hence, the correct answer is option (b).

Solution 23

Given that, $\sin\theta - \cos\theta = 0$

$$\Rightarrow \sin\theta = \cos\theta$$

$$\Rightarrow \frac{\sin\theta}{\cos\theta} = 1$$

$$\Rightarrow \tan\theta = 1$$

$$\Rightarrow \tan\theta = \tan 45^\circ$$

$$\Rightarrow \theta = 45^\circ$$

Thus, the value of θ is 45°.

Hence, the correct answer is option (b).

Solution 24

Given that,
Probability of happening an event = 0.02
Since the sum of probabilities of all the elementary events of an experiment is

1.
$\therefore$ Probability of not happening an event = $1 - 0.02$
= 0.98

Hence, the correct answer is option (c).

Solution 25

Let the inner and outer radius be $r = 7 \text{ cm}$ and $R = 14 \text{ cm}$.

Area of the shaded region = $\pi\left(R^2 - r^2\right)$

$= \frac{22}{7}\left(14^2 - 7^2\right)$

$= \frac{22}{7}(196 - 49)$

$= \frac{22}{7} \times 147$

= 462 cm^2.

Hence, the correct answer is option (a).

Solution 26

$$\frac{1}{1+\sin\theta} + \frac{1}{1-\sin\theta} = \frac{1-\sin\theta+1+\sin\theta}{(1+\sin\theta)(1-\sin\theta)}$$

$$= \frac{2}{1-\sin^2\theta} \qquad \left(\because\ (a+b)(a-b) = a^2 - b^2\right)$$

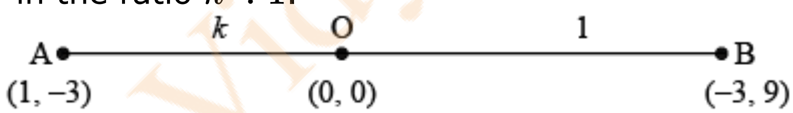
$$= \frac{2}{\cos^2\theta} \qquad \left(\because\ 1 - \sin^2\theta = \cos^2\theta\right)$$

$$= 2sec^2\theta$$

Hence, the correct answer is option (d).

Solution 27

Let O(0, 0) divide the line segment joining the points $\mathrm{A}(1, -3)$ and $\mathrm{B}(-3, 9)$ in the ratio k : 1.



$\therefore\ (0, 0) = \left(\frac{-3k+1}{k+1}, \frac{9k-3}{k+1}\right)$

$\Rightarrow \frac{-3k+1}{k+1} = 0$

$\Rightarrow -3k + 1 = 0$

$\Rightarrow 3k = 1$

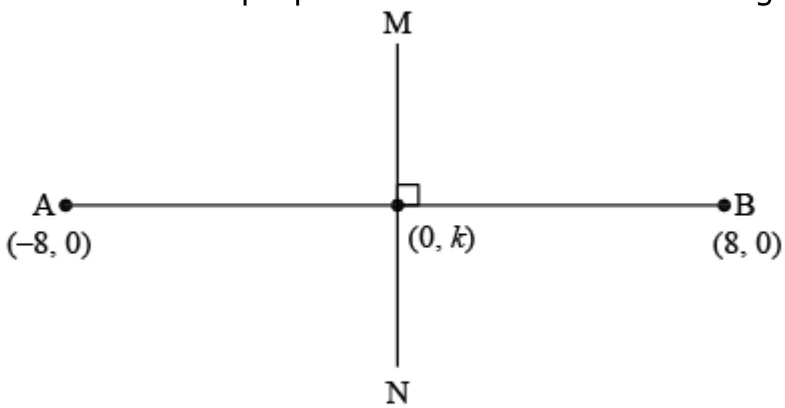
$\Rightarrow k = \frac{1}{3}$

$\Rightarrow k : 1 = 1 : 3$

Hence, the correct answer is option (b)

Solution 28

Let MN be the perpendicular bisector of line segment AB.



$$\therefore \ (0,\ k) = \text{midpoint of AB}$$
$$= \left(\frac{-8+8}{2},\ 0\right)$$
$$= (0,\ 0)$$

Thus, the value of *k* is 0.

Hence, the correct answer is option (a).

Solution 29

Congruence basically means that two objects have the same size and shape. Two congruent objects are always similar but two similar figures may or may not be congruent. The case of congruence will only be true here, if the ratio of corresponding sides(lengths) of two similar figures is 1.

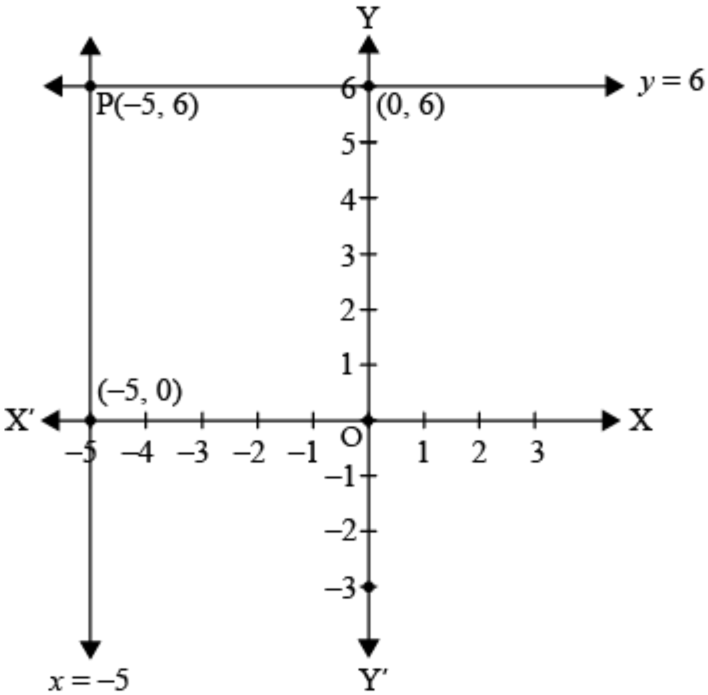
Rectangles have all angles equal to 90° but the ratio of length and breadth may be any real number. Thus, not all rectangles are similar.

Polygons having same number of sides may have different corresponding angles thus, it is not necessary that all polygons are similar.

Hence, the correct answer is option (a).

Solution 30

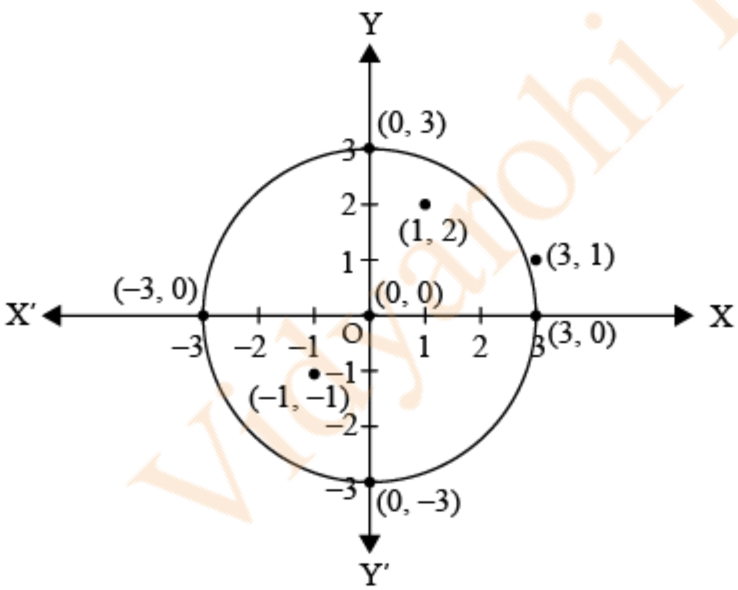
The intersection point of $x = -5$ and $y = 6$ is $(-5,\ 6)$.



Hence, the correct answer is option (a).

Solution 31

A circle of radius 3 units is centered at (0, 0) can be drawn as shown below:



Hence, the correct answer is option (d).

Solution 32

Two lines $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ have infinitely many solutions if

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

Here, $a_1 = 3, b_1 = 5$ and $c_1 = -8$. Also, $a_2 = k, b_2 = 15$ and $c_2 = -24$.

$\Rightarrow \frac{3}{k} = \frac{5}{15} = \frac{-8}{-24} = \frac{1}{3}$

$\Rightarrow \frac{3}{k} = \frac{1}{3}$

$\Rightarrow k = 9$

Hence, the correct answer is option (b).

Solution 33

Let the first even number be 2x. Therefore, its consecutive even number is 2x + 2.

Now, 2x + 2 = 2(x + 1).

Thus, the HCF of two consecutive even numbers is 2.

Hence, the correct answer is option (c).

Solution 34

The given quadratic polynomial is x^2 + 99x + 127.

$\Rightarrow \text{Sum of zeroes} = \frac{-b}{a} = \frac{-99}{1} = -99 \text{ and}$

$\text{Product of zeroes} = \frac{c}{a} = \frac{127}{1} = 127$

Since the product of the two zeroes of the polynomial is positive, therefore either both the numbers are positive or both are negative.

Now, the sum of the zeroes is negative. Thus, both the zeroes are negative.

Hence, the correct answer is option (a).

Solution 35

Given that a line segment joins the points (−3, 9) and (−6, −4).

Let the coordinates of the midpoint of the line segment be (x, y).

Using the mid point formula,

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

$$= \left(\frac{-3-6}{2},\ \frac{9-4}{2}\right)$$

$$= \left(\frac{-9}{2},\ \frac{5}{2}\right)$$

Hence, the correct answer is option (c).

Solution 36

Given: $\frac{13}{2\times5^2\times7}$

Here, the denominator is $2 \times 5^2 \times 7$.
Since the denominator is not of the form $2^m \times 5^n$, and it also has 7 as its factors, the decimal expansion of $\frac{13}{2\times5^2\times7}$ is non-terminating and repeating.

Hence, the correct answer is option (d).

Solution 37

In ΔABC, DE || BC

By Basic Proportionality Theorem,

$$\frac{\mathrm{DE}}{\mathrm{BC}} = \frac{\mathrm{AD}}{AB}$$
$$\Rightarrow \frac{\mathrm{DE}}{\mathrm{BC}} = \frac{\mathrm{AD}}{\mathrm{AD+AB}}$$
$$\Rightarrow \frac{\mathrm{DE}}{\mathrm{BC}} = \frac{2}{2+3}$$
$$\Rightarrow \frac{\mathrm{DE}}{\mathrm{BC}} = \frac{2}{5}$$
$$\Rightarrow \mathrm{DE} : \mathrm{BC} = 2 \ : \ 5$$

Hence, the correct answer is option (b).

Solution 38

Given: Two numbers 50 and 20.

Since HCF (a, b) × LCM (a, b) = $a \times b$

∴ HCF × LCM = 50 × 20

⇒ HCF × LCM = 1000

Thus, the (HCF × LCM) for the numbers 50 and 20 is 1000.

Hence, the correct answer is option (a).

Solution 39

If the number 6^n ends with the digit zero (0), then it should be divisible by 5.
As any number with the unit place as 0 or 5 is divisible by 5.
Since the prime factorization of 6^n doesn't contain the prime number 5.
Thus it proves that 6^n cannot end with the digit 0 for any natural number n.

Hence, the correct answer is option (d).

Solution 40

$(1 + \tan^2 A)(1 + \sin A)(1 - \sin A) = (1 + \tan^2 A)(1 - \sin^2 A)$ $[\because (a - b)(a + b) = a^2 - b^2]$

$= (1 + \tan^2 A)(\cos^2 A)$ $(\because \sin^2 A + \cos^2 A = 1)$

$$= \left(1 + \frac{\sin^2 A}{\cos^2 A}\right)\left(\cos^2 A\right)$$
$$= \left(\frac{\sin^2 A + \cos^2 A}{\cos^2 A}\right)\left(\cos^2 A\right)$$
$$= \left(\frac{1}{\cos^2 A}\right)\left(\cos^2 A\right) \qquad \left(\because \sin^2 A + \cos^2 A = 1\right)$$
$$= 1$$

Hence, the correct answer is option (b).

Section C

Solution 41

Given: $h = -t^2 + 2t + 8$

$\Rightarrow h = -t^2 + 2t + 8 + 1 - 1$

$\Rightarrow h = -t^2 + 2t - 1 + 8 + 1$

$\Rightarrow h = -(t^2 - 2t + 1) + 9$

$\Rightarrow h = -(t - 1)^2 + 9$

As, $-(t - 1)^2$ will always be less than or equal to zero.

Therefore, the maximum height will be 9 m.

Thus, the maximum height achieved by the ball is 9 m.

Hence, the correct answer is option (c).

Solution 42

Since, the degree of the polynomial $h = -t^2 + 2t + 8$ is 2 therefore it is a quadratic polynomial.

Hence, the correct answer is option (b).

Solution 43

Given: $h = -t^2 + 2t + 8$
$\Rightarrow h = -(t-1)^2 + 9$

Here, the maximum height is 9 m.
$\because 9 = -(t-1)^2 + 9$
$\Rightarrow t - 1 = 0$
$\Rightarrow t = 1$

Thus, the maximum height *h* = 9 m corresponds to *t* = 1.

Hence, the correct answer is option (c).

Solution 44

A polynomial with degree *n* has *n* zeroes and intersects the *x*-axis at atmost *n* points.
Since, the degree of the polynomial is 2 therefore it has 2 zeroes.

Hence, the correct answer is option (b).

Solution 45

Since, the graph of the polynomial intersects the *x*-axis at *t* = 4 therefore, 4 is a zero of the polynomial.
Also, if the quadratic equation $ax^2 + bx + c = 0$ has roots $\alpha \text{ and } \beta$ then,
$\alpha + \beta = \frac{-b}{a}$
In the polynomial $-t^2 + 2t + 8$, *b* = 2, *a* = −1. Let the other root be *m*.
$\Rightarrow 4 + m = \frac{-2}{-1}$
$\Rightarrow 4 + m = 2$
$\Rightarrow m = -2$

Thus, the zeroes of the polynomial is −2 and 4.

Hence, the correct answer is option (b).

Solution 46

Since, RHS is not a similarity criterion therefore, it is not suitable for ΔABC to be similar to ΔQRP.

Hence, the correct answer is option (d).

Solution 47

In ΔABC, AB = AC = *x*.
Using Pythagoras theorerm, we get
$(BC)^2 = (AB)^2 + (AC)^2$
$= x^2 + x^2$

= $2x^2$

⇒ BC = $x\sqrt{2}$ unit

Hence, the correct answer is option (a).

Solution 48

Since, PR = 2(BC) (PR is diagonals of 2 squares)
$\Rightarrow \text{PR} = 2 \times \sqrt{2}x = 2\sqrt{2}x$
So,
$\frac{\text{BC}}{\text{PR}} = \frac{\sqrt{2}x}{2\sqrt{2}x} = \frac{1}{2}$

Hence, the correct answer is option (c).

Solution 49

Area of a triangle = $\frac{1}{2} \times \text{base} \times \text{height}$
Now, in ΔPQR,
base = QR = $x + x = 2x$
height = PQ = $x + x = 2x$
So, ar(ΔPQR) = $\frac{1}{2} \times (2x)(2x) = 2x^2$

Similarly, in ΔABC,
base = AB = x
height = AC = x
So, ar(ΔABC) = $\frac{1}{2} \times (x)(x) = \frac{x^2}{2}$

So,

$$\frac{\text{ar(PQR)}}{\text{ar(ABC)}} = \frac{2x^2}{\frac{x^2}{2}} = \frac{4}{1}$$

Hence, the correct answer is option (c).

Solution 50

In ΔPQR and ΔBAC,

$$\frac{\text{PQ}}{\text{BA}} = \frac{\text{QR}}{\text{AC}} = \frac{\text{PR}}{\text{BC}} = \frac{2}{1}$$

∴ ΔPQR ~ ΔBAC

In ΔPQR and ΔTQS,

$$\frac{\text{PQ}}{\text{TQ}} = \frac{\text{QR}}{\text{QS}} = \frac{\text{PR}}{\text{TS}} = \frac{2}{1}$$

∴ ΔPQR ~ ΔTQS

In ΔCBA and ΔSTQ,

$$\frac{CB}{ST} = \frac{BA}{TQ} = \frac{CA}{SQ} = \frac{1}{1}$$

∴ ΔCBA ~ ΔSTQ

In ΔPQR and ΔABC,

$$\frac{PQ}{BA} = \frac{QR}{AC} = \frac{PR}{BC} = \frac{2}{1}$$

∴ ΔPQR ~ ΔBAC

Hence, the correct answer is option (d).