MATHS

BOOKS - EDUCART PUBLICATION

SAMPLE PAPER SOLVED 10

Part A Section I

1. What is the HCF of the smallest prime number and the smallest composite number?

▶ **Watch Video Solution**

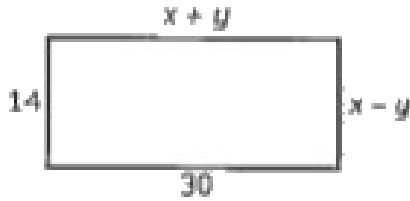**2.** Write a quadratic equation, sum of whose roots is $-3\sqrt{2}$ and their product is 4.

3. In an A.P. if $S_n = 5n^2 - 3n$ find the A.P.

OR

From the adjoining figure of a rectangle, find

the values of x ond y.

$x + y$

14

$x - y$

30

4. Find a point which divides the join of A (-3, 4) and B (9,6) internally in the ratio 3: 2.

5. If the distance between the points P(2, - 3) and Q (10, y) is 10 units, then find the value of 'y'.

6. Draw a line segment of length 8 cm and divides it in the ratio $2 : 3$

7. What should be added to the polynomial $x^2 - 5x + 4$, so that 3 is the zero of the resulting polynomial? (a) 1 (b) 2 (c) 4 (d) 5

▶ **Watch Video Solution**

8. For what value of k, do the equations $3x - y + 8 = 0$ and $6x - ky = -16$ represent coincident lines ?

▶ **Watch Video Solution**

9. The 4th term from the end of an AP -11, -8, -5, ..., 49 is

▶ **Watch Video Solution**

10. If the curved surface ared of a sphere is 4π sq m. then find the diameter of the sphere.

▶ **Watch Video Solution**

11. What is surface area of the resultant cuboid, obtained on joining 2 identical cubes each of edge 2 cm?

▶ **Watch Video Solution**

12. If $\triangle ABC$ is right angled at C, then find the value of cos (A + B)

▶ **Watch Video Solution**

13. A letter is drawn at random from the letters of the word ERROR. What is probability that the drawn latter is R ?

14. If cos (A+B) =0 and sin (A-B) = $\dfrac{\sqrt{3}}{2}$ then calculate the value of A.

15. In $\triangle ABC$, right angled at B. If $\tan A = \dfrac{1}{\sqrt{3}}$, find the value of $\sin A. \cos C + \cos A \sin C$.
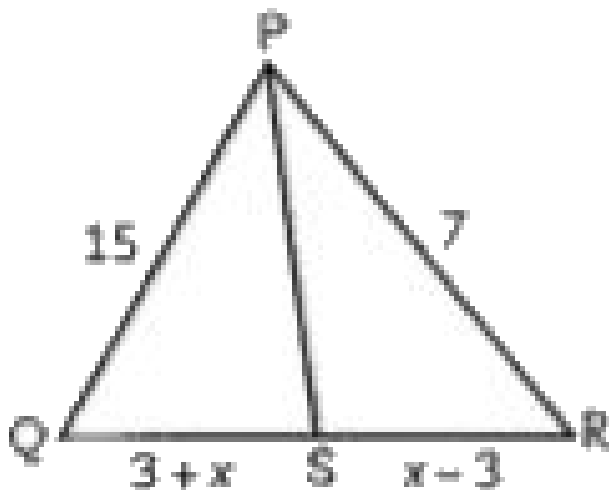
16. If a fair dice is thrown once, find the probability of getting a number which is even as well as prime.

17. In the given figure, PS is the bisector of $\angle QPR$. If PO = 15, PR = 7, QS = 3 + x and SR = x - 3, find the value of x.

18. If in triangles ABC and PQR, $\dfrac{AB}{PQ} = \dfrac{AC}{RP}$ then write the equality of angles triangles of the two triangles such that two triangles are similar.

19. If 6th term and 8th term of an A.P. are 12 and 22 respectively, then find its 2nd term.

20. Determine zeros of polynomial p(x)
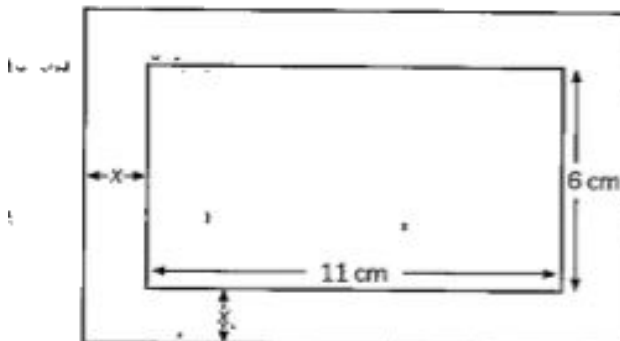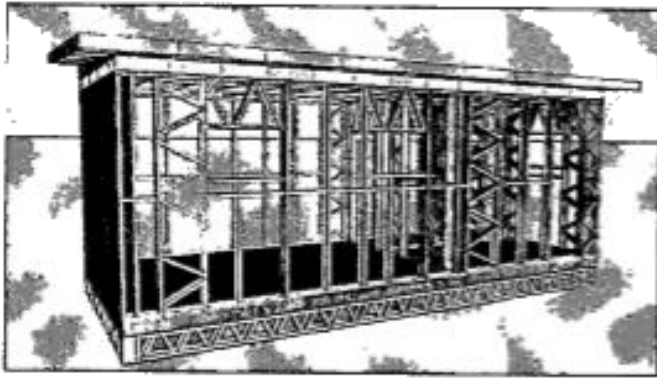
$= x^3 - 7x$.

▶ **Watch Video Solution**

Part A Section Ii

1. The frame will have a solid base and will be cut out of a piece of steel, and to keep the weight down, the final area of the frame should be 28 sq cm. In order to input the right values in the CAD software, the engineer

needs to calculate some basic things.

If the width of the frame is x cm, then the dimensions of the outer frame are:

A. (11 + x) and (6 + x)

B. (11 - x) and (6 - x)

C. (11 + 2x) and (6 + 2x)

D. (11 - 2x) and (6 - 2x)

Answer:

2. Solve for x and y:

$$\frac{2}{x} + \frac{1}{y} = 5$$
$$\frac{2}{x} + \frac{3}{y} = 6$$

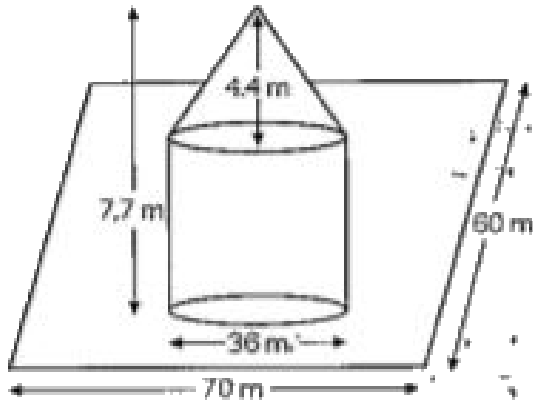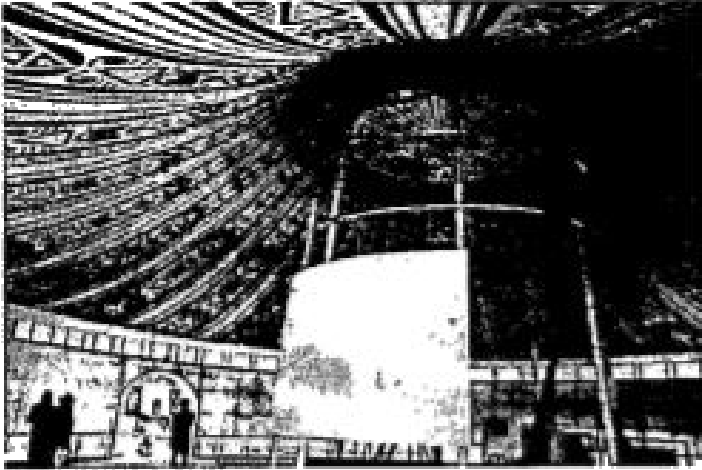**3.** Determine the nature of roots of the equation $3x^2 + 7x + 6 = 0$

4.

The height of the cylindrical part is:
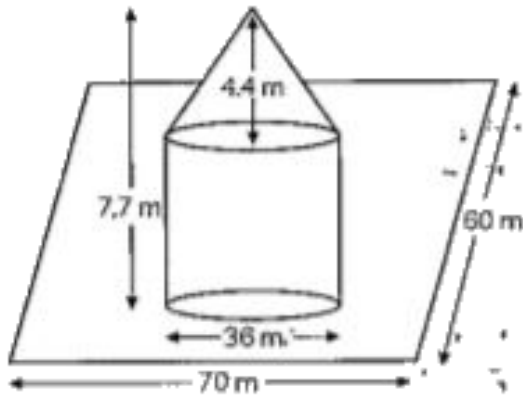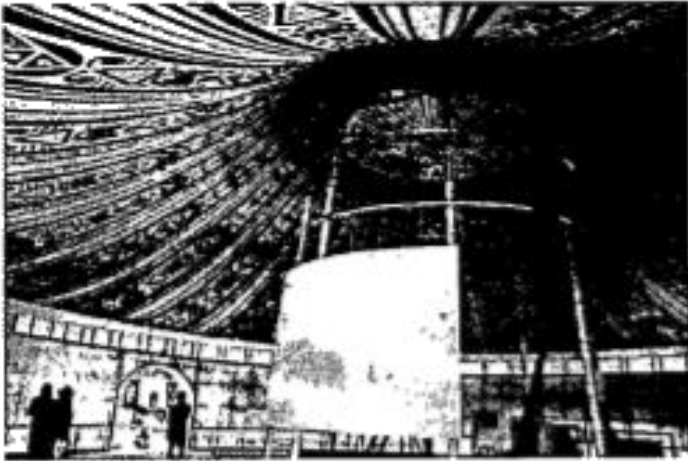
A. 2.3 m

B. 6.3 m

C. 3.3 m

D. 12.1 m

Answer:

▶ **Watch Video Solution**

5.

The area of canvas to be used in making the tent, is:

A. 1353 sq cm
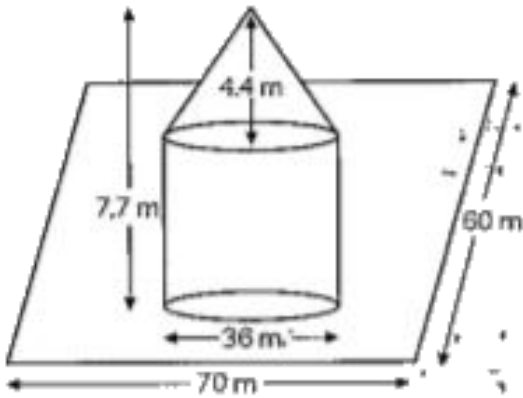
B. 1386 sqm

C. 1406 sq m

D. 1533 sq m

Answer:

▶ **Watch Video Solution**

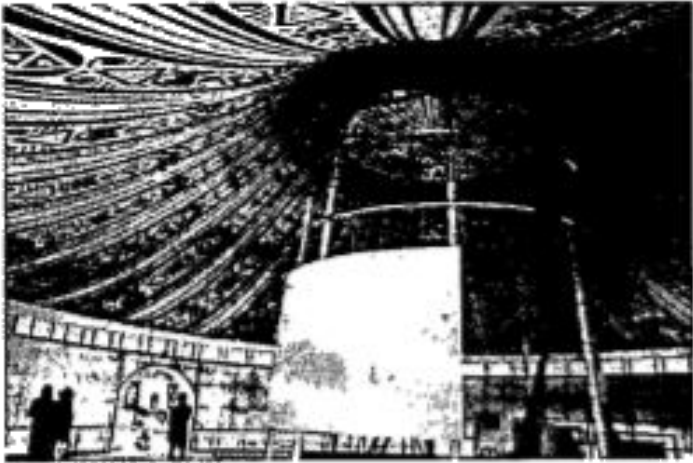**6.** If $HCF(x, y) = 18$ and $xy = 630$. Then find $LCM(x, y)$.

▶ **Watch Video Solution**

7.

The area of the rectangular park outside the tent is:

A. 883 sqm

B. 2864 sqm

C. 3182 sq m

D. 4200 sq m

Answer:

▶ **Watch Video Solution**

8. Ramesh places a mirror on level ground to determine the height of a pole (with traffic light fired on it) (see the figure). He stands at a

certain distance so that he can see the top of

the pole reflected from the mirror. Ramesh's

eye level is 1.8 m above the ground. The

distance of Ramesh and the pole from the

mirror are 1.5 m and 2.5 m respectively.

The two similar triangles shown in the figure

are:

A. $\triangle ABM, \triangle MCD$

B. $\triangle AMB, \triangle CDM$

C. $\triangle ABM, \triangle CDM$
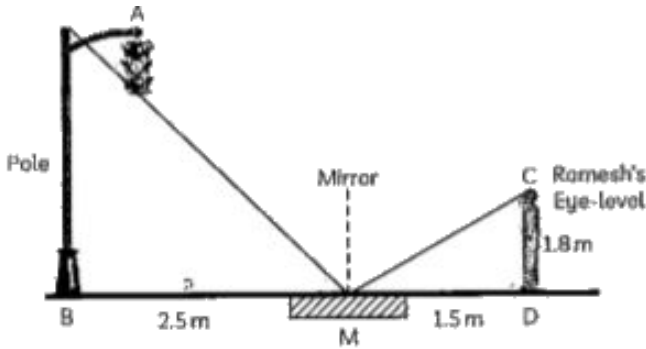
D. $\triangle ABM, \triangle MDC$
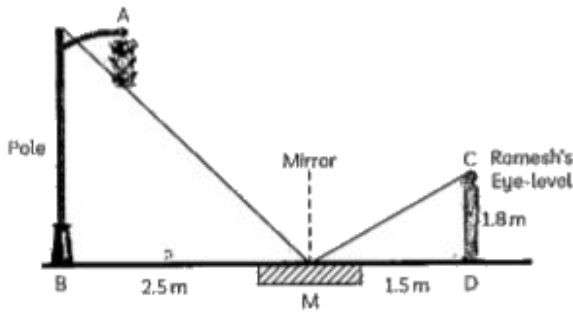
Answer:

▶ **Watch Video Solution**

9. Ramesh places a mirror on level ground to determine the height of a pole (with traffic light fired on it) (see the figure). He stands at a certain distance so that he can see the top of

the pole reflected from the mirror. Ramesh's

eye level is 1.8 m above the ground. The

distance of Ramesh and the pole from the

mirror are 1.5 m and 2.5 m respectively.

Which criterion of similarity is applicable to

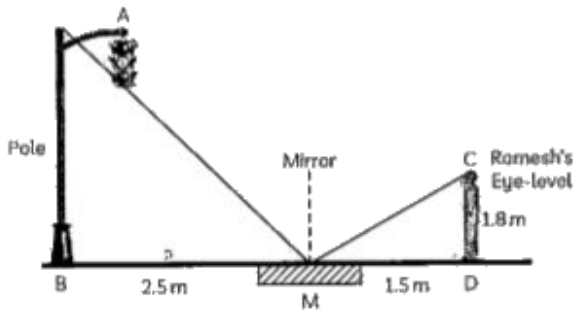similar triangles?

A. SSA

B. ASA

C. SSS

D. AAA

Answer:

▶ **Watch Video Solution**

10. Ramesh places a mirror on level ground to determine the height of a pole (with traffic light fired on it) (see the figure). He stands at a certain distance so that he can see the top of the pole reflected from the mirror. Ramesh's

eye level is 1.8 m above the ground. The distance of Ramesh and the pole from the mirror are 1.5 m and 2.5 m respectively.

The height of the pole is:

A. 3 mètres

B. 2.8 metres

C. 3.2 metres

D. 3.8 metres

Answer:

11. Ramesh places a mirror on level ground to determine the height of a pole (with traffic light fired on it) (see the figure). He stands at a certain distance so that he can see the top of the pole reflected from the mirror. Ramesh's eye level is 1.8 m above the ground. The distance of Ramesh and the pole from the mirror are 1.5 m and 2.5 m respectively.
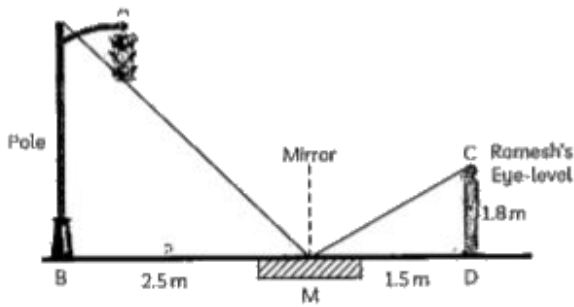
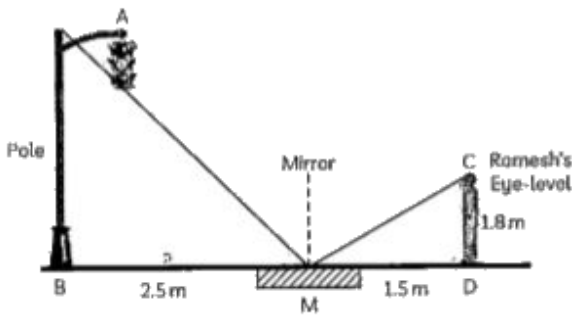If Ramesh's eye level is 1.2 m above the ground, then the height of the pole is:

A. 3 metres

B. 2.6 metres

C. 2.2 metres

D. 2 metres

Answer:

12.

If the distance of Ramesh and the pole from the mirror are 2.5 m and 1.5 m respectively, then the height of the pole is:

A. 3 metres

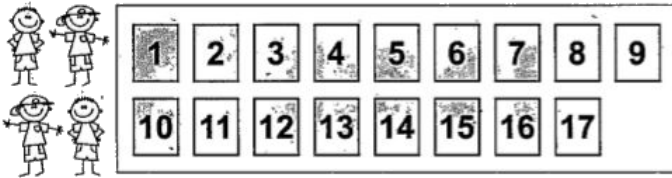B. 2.1 metres

C. 1.8 metres

D. 1.08 mètres

Answer:

▶ **Watch Video Solution**

13. 4 boys are having a night in and one of the boy's mother decides to play a game. 17 cards numbered 1, 2, 3 . 17 are put in a box and mixed thoroughly. The mother asks each boy to draw a card and after each draw, the card is

replaced back in the.box. She shows some magic tricks and at the end, decides to test their mathematical skills.

The probability of drawing an odd number card in the first draw by the first boy is:

A. $\dfrac{11}{17}$

B. $\dfrac{10}{17}$

C. $\dfrac{9}{17}$
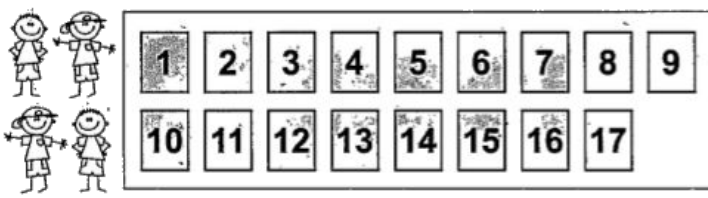
D. $\dfrac{8}{17}$

Answer:

14. 4 boys are having a night in and one of the boy's mother decides to play a game. 17 cards numbered 1, 2, 3 . 17 are put in a box and mixed thoroughly. The mother asks each boy to draw a card and after each draw, the card is replaced back in the.box. She shows some magic tricks and at the end, decides to test their mathematical skills.

1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	

The probability of drawing a prime number card in the second draw by the second boy is

A. $\dfrac{3}{17}$

B. $\dfrac{7}{17}$

C. $\dfrac{9}{17}$

D. $\dfrac{8}{15}$

Answer:

▶ Watch Video Solution

15. In a group of boys, two boys are brothers and in this group 6 more boys are there. In how many ways they can sit in a row if the brothers are not to sit side by side? (A) 30240 (B) 1410 (C) 2830 (D) 8420

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

B. $\dfrac{1}{3}$

C. $\dfrac{2}{3}$

D. $\dfrac{5}{6}$

Answer:

16. In a class of 20 students, 10 boys brought 11 books each and 6 girls brought 13 books each. Remaining students brought atleast on book each and no two students brought the same number of books. If the average number of books brought in the class is a positive integer,

then what could be the total number of books

brought by the remaining students?

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

B. $\dfrac{1}{3}$

C. 0

D. 1

Answer:

▶ **Watch Video Solution**

17. Probability of selecting a number that is a multiple of both 4 and 7 from the set $S = \{1, 2, 3, \ldots .50\}$ is

Part B Section Iii

1. Using prime factorisation, find the LCM of 90 and 120.

2. Using the quadratic formula, find the roots of the quadratic equation: $x^2 + x - 12 = 0$.

3. If tan A $= \dfrac{7}{24}$ find the value of sin A cos A.

4. Prove that

$$\sin^2 A + \sin^2 A \tan^2 A = \tan^2 A.$$

5. A bag contains 8 red, 6 white and 4 black balls. A ball is drawn at random from the bag. Find the probability that the drawn ball is (i) red or white (ii) not black (iii) neither white nor black.

6. If the centroid of ΔABC having vertices A(a, b), B(b, c) and C(c, a) is the origin, then find the value of (a+b+c).

> ▶ **Watch Video Solution**

7. The perimeter of a sheet of paper in the shape of a quadrant of a circle is 75 cm. Find its area

> ▶ **Watch Video Solution**

1. If $\sin\theta + \cos\theta = \sqrt{3}$ then prove that

$\tan\theta + \cot\theta = 1$

▶ **Watch Video Solution**

2. Evaluate : $\dfrac{\sin 30° + \tan 45° - \cos ec60°}{\sec 30° + \cos 60° + \cot 45°}$

▶ **Watch Video Solution**

3. Solve for s and h:

$$8s - 3h = -9$$

$$-8s + h = 1$$

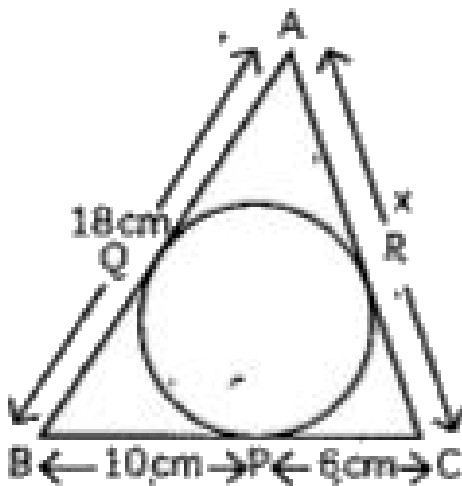**4.** If the points A (1,2), B (2,3) , C *a,2) and D (-4-,3) form a parallelogram , them find the value of a and height of the parallelogram taking AB as base.
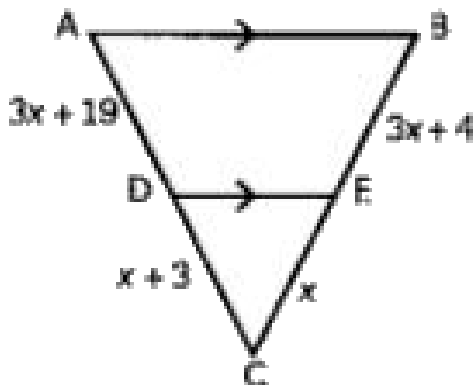
5. In the figure, all three sides of a triangle ABC touch the circle at points P, Q and R. Find the value of x.

18cm, B←10cm→P←6cm→C

6. Find the value of x for which DE || AB in the figure given below:

7. Compute the mean and mode of the following data:

Marks obtained	25-35	35-45	45-55	55-65	65-75	75-85
Number of students	7	31	33	17	11	1

8. The product of the LCM and HCF of two numbers is 24. The difference of the two numbers is 2. Find the numbers

Part B Section V

1. SHAPE CHANGE : How many spherical lead shots each 4.2cm in a diameter can be obtained from a rectangular solid of lead with dimension 66cm; 42 cm;21 cm.

2. The first term of an AP is 5, the last term is 45 and the sum is 400. Find the number of terms and the common difference.

3. A tree is broken by the wind. The top of that tree struck the ground at an angle of $30°$ and at a distance of 30 m from the root. Find the height of the whole tree. ($\sqrt{3}$ = 1.73)

4. Prove that is a right angle triangle, the square of the hypotenuse is equal the sum of the squares of other two sides.

5. Find the value of

$$5\tan^2 30° + 4\cos^2 45° - \sin^2 60° + 1$$

▶ Watch Video Solution