CLASS 9

CREST Mathematics Olympiad (CMO)

Syllabus for CMO is available at https://www.crestolympiads.com/cmo-syllabus

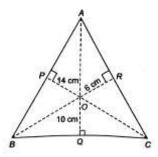## Pattern And Marking Scheme

Class	Topic/Section	No. of Questions	Marks per Questions	Total Marks
1st to 4th	Practical Mathematics	25	1	25
	Achiever's Section	10	2	20
	Grand Total	**35**	-	**45**
5th to 10th	Practical Mathematics	40	1	40
	Achiever's Section	10	2	20
	Grand Total	**50**	-	**60**

1. If $(x + 1)$ is a factor of $x^n + 1$, then which of the following statements is true?

   (a) n is an odd integer
   (b) n is an even integer
   (c) n is a negative integer
   (d) n is a positive integer

2. From a point in the interior of an equilateral triangle, perpendiculars are drawn on three sides. The lengths of the perpendiculars are 14 cm, 10 cm and 6 cm. Find the area of the triangle.
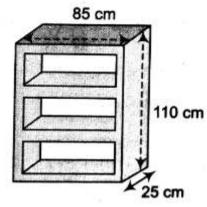

   (a) $150\sqrt{3}$ m²
   (b) $275\sqrt{3}$ m²
   (c) $300\sqrt{3}$ m²
   (d) $345\sqrt{3}$ m²

3. A wooden bookshelf has external dimensions as follows: Height = 110 cm, Depth = 25 cm, Breadth = 85 cm.
The thickness of the plank is 5 cm everywhere. The external faces are to be polished and the inner faces are to be painted. If the rate of polishing is 20 paise per cm^2 and the rate of painting is 10 paise per cm^2, then find the total expenses for polishing and painting the surface area of the bookshelf:

(a) Rs. 3820

(b) Rs. 4530

(c) Rs. 5270

(d) Rs. 6390

4. In the given graph, triangle ABC and triangle ABD are equilateral triangles. Find the respective co-ordinates of points C and D:
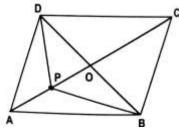

(a) (0, a√3) (0, a√3)

(b) (0, -a√3) (0, a√3)

(c) (0, a√3) (0, -a√3)

(d) (a√3, 0) (-a√3, 0)

5. The diagonals AC and BD of a parallelogram ABCD intersect at O. P is a point such that AP = 1/4 AC. Which of the following statements is true?

(a) area(ΔADP) = area(ΔAPB)   (b) area(ADP) = area(ΔDOC)
(c) area(ΔADP) = area(ΔBCD)   (d) area (ΔADP) = area(ΔADB)

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6. Sarika sells to the first customer half her stock and half her coconuts, to the second Customer she sells half her remaining stock and half a coconut and so on to the third and fourth customer. 15 coconuts are left with her now. How many coconuts did she have before she started selling?

(a) 63   (b) 127
(c) 240   (d) 289

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7. Which of the following statements is incorrect?

(a) If a point lies between A and B, then AP < AB and BP < AB.
(b) A line segment has fixed length.
(c) One point always determines a unique line.
(d) A line segment can be produced indefinitely on either side.

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8. On a construction site, the mean wage of 150 workers, working in a factory running with three shifts with 60, 40 and 50 workers, is Rs. 114. The mean wage of 60 workers working in the first shift is Rs. 121.50 and that of 40 workers working in the second shift is Rs. 107.75. Find the mean wage of those who are working in the third shift?

(a) Rs. 100   (b) Rs. 110
(c) Rs. 120   (d) Rs. 115.75

Achiever's Section

9. Which of the following statements is correct?
Statement A: Two triangles are said to be congruent if two sides and an angle of one triangle are respectively equal to the two sides and an angle of the other.
Statement B: Two triangles are congruent if two sides and the included angle of one triangle are equal to the corresponding two sides and the included angle of the other.

(a) Statement A is false and statement B is the correct explanation of A.
(b) Statement A is true and statement B is the correct explanation of A.
(c) Statement A is true and statement B is false.
(d) Statement A is false and statement B is true.

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10. 400 students of class IX of a school appeared for a test of 100 marks in the subject of mathematics and the data about the marks secured is presented in the table.

Marks secured	0-25	26-50	51-75	Above 75
Number of students	50	220	100	30

If the result card of a student is picked up at random, then what is probability that the student has secured more than 50 marks?

(a) 0.523   (b) 0.532
(c) 0.325   (d) 0.352

Answers

1. (a), 2. (c), 3. (c), 4. (c), 5. (a), 6. (d), 7. (d), 8. (b), 9. (a), 10. (c).