

7th iOM'14

International Olympiad of Mathematics



Presented by :



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CLASS : 9 (SYLLABUS & SAMPLE QUESTIONS)

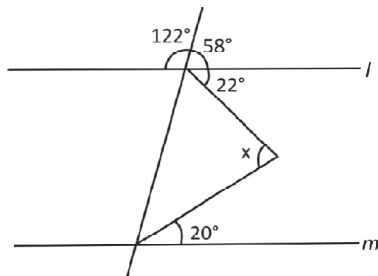
Real Numbers, Polynomials Logarithms, Linear Equation in Two Variables, Line & Angles, Triangles, Quadrilaterals, Trigonometry, Mensuration, Statistics, Probability, Coordinate Geometry, Circles, Mathematical Reasoning and Logical Ability, Applied Mathematics

The Actual Question Paper Contains 40 Questions. The Duration of the Test Paper is 60 Minutes.

1. If $x = 5 + \sqrt{24}$, find the value of $\left(x^2 + \frac{1}{x^2}\right)$.

- (A) 100 (B) 24
(C) 98 (D) 25
(E) None of these

2. The value of 'x' in the following figure, if $l \parallel m$ is:



- (A) 58° (B) 22°
(C) 20° (D) 42°
(E) None of these

3. Find the remainder when $4x^4 - 3x^3 - 2x^2 + x - 7$ is divided by $x + \frac{2}{3}$.

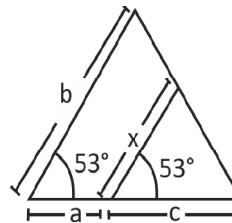
7 is divided by $x + \frac{2}{3}$.

- (A) $\frac{-57}{8}$ (B) -3

(C) $\frac{-557}{81}$ (D) $\frac{221}{7}$

(E) None of these

4. In the figure given below, the relation between a, b, c and x is:



- (A) $x = \frac{ab}{a+b}$ (B) $x = \frac{bc}{a+c}$
(C) $x = \frac{ac}{b+c}$ (D) $x = \frac{abc}{a+b+c}$
(E) None of these

5. The area of the region bounded by $2x + y = 6$, $2x - y + 2 = 0$ and x-axis is:

- (A) 4 sq. units
(B) 6 sq. units
(C) 8 sq. units
(D) 2 sq. units
(E) None of these

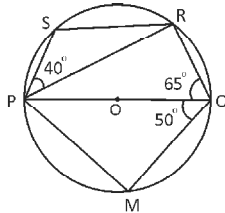
6. If $\cos \theta = \frac{1}{\sqrt{2}}$, then $\frac{2\cos^2\theta + 3\tan^2\theta}{4\cot^2\theta - \sin^2\theta}$ is equal to

- (A) $\frac{8}{7}$ (B) $\frac{8}{9}$
 (C) $\frac{9}{8}$ (D) $\frac{7}{8}$
 (E) None of these

7. A two digit number is obtained by either multiplying the sum of digits by 8 and adding 1 or by multiplying the difference of digits by 13 and adding 2. The number is:

- (A) 14
 (B) 41
 (C) 51
 (D) 13
 (E) None of these

8. The measure of $\angle QPM$ in the following figure is:

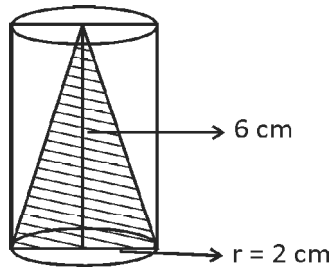


- (A) 65° (B) 50°
 (C) 40° (D) 72°
 (E) None of these

9. Three years ago, the mean age of Harison's family of 5 members was 17. A baby having been born, the average age of his family remains same today. The present age of the baby is:

- (A) 1 year (B) 1.5 years
 (C) 2.5 years (D) 2 years
 (E) None of these

10. The volume of the shaded region in the following figure is:



- (A) $8\pi \text{ cm}^3$ (B) $4\pi \text{ cm}^3$
 (C) $2\pi \text{ cm}^3$ (D) $12\pi \text{ cm}^3$
 (E) None of these

ANSWERS

1. (C) 2. (D) 3. (C) 4. (B) 5. (A) 6. (A) 7. (B) 8. (C) 9. (D) 10. (A)