

10th iOM'17

International Olympiad of Mathematics



Presented by:
**SILVER
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NEW DELHI - INDIA

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**Mathematics Olympiad
Foundation**
New Delhi, India
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CLASS : 9 (SYLLABUS & SAMPLE QUESTIONS)

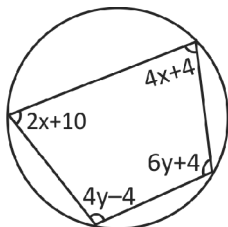
Real Numbers, Polynomials, Logarithms, Linear Equation in Two Variables, Line & Angles, Triangles, Quadrilaterals, Area of Triangles, Parallelograms & Circles, Trigonometric Ratios & Identities, Mensuration, Statistics, Probability, Coordinate Geometry, Applied Mathematics, Verbal & Non-verbal Reasoning.

The Actual Question Paper Contains 50 Questions. The Duration of the Test Paper is 60 Minutes.

1. If $x = \frac{7 - \sqrt{45}}{2}$, find the value of $x^3 + \frac{1}{x^3}$.

- (A) 47
(B) 298
(C) 322
(D) 428
(E) None of these

2. From the given figure, find out the values of x and y .



- (A) $x = 26, y = 19$
(B) $x = 26, y = 29$
(C) $x = 25, y = 20$
(D) $x = 40, y = 25$
(E) None of these

3. What is the remainder when $x + x^9 + x^{25} + x^{49} + x^{81}$ is divided by $x^3 - x$.

- (A) $5x^2$ (B) $3x^2$
(C) $4x$ (D) $5x$
(E) None of these

4. The sides of a quadrilateral taken in order are 26 cm, 27 cm, 7 cm and 24 cm. The angle between the last two sides is a right angle. Find the area of quadrilateral.

- (A) 291.85 cm^2
(B) 375.85 cm^2
(C) 84 cm^2
(D) $600\sqrt{15} \text{ cm}^2$
(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

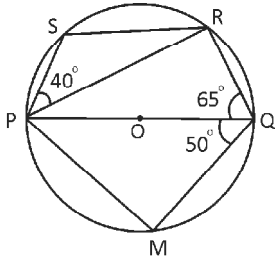
to

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

7. An aeroplane leaves an airport and flies due north at a speed of 1000 km/h. At same time, another plane flies due west at a speed of 1200 km/h from the same place. The approximate distance between the two planes after 1.5 hours will be:

- (A) 2400 km (B) 2520 km
 (C) 2343 km (D) 2434 km
 (E) None of these

8. If O is the centre of the circle, then measure of $\angle QPM$ in the following figure is:

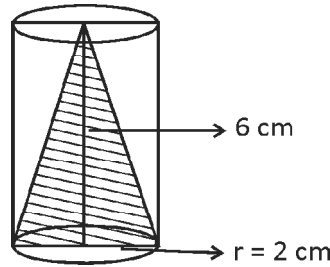


- (A) 65° (B) 50°
 (C) 40° (D) 72°
 (E) None of these

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