

CLASS 9 - MATHS | SOF IMO-STYLE LEVEL 1

50 MCQs | Maximum Marks: 60 | Time: 60 minutes

Name: _____ Batch: _____ Date: _____

Choose one correct option. Q1-45: 1 mark each; Q46-50: 3 marks each. No negative marking.
All questions are compulsory. No calculators. Original Prodigy practice paper; not an official SOF paper.

LOGICAL REASONING

- Find the next number: 2, 6, 12, 20, 30, ...
(A) 48 (B) 40 (C) 44 (D) 42
- If each letter is shifted two places forward, MATH is coded as:
(A) OCUI (B) OCVJ (C) NBUI (D) PDWK
- Which is the odd one out?
(A) Sphere (B) Square (C) Rectangle (D) Triangle
- A student faces north, turns right, then right again. Which way does the student face?
(A) North (B) East (C) South (D) West
- Complete the analogy: Hand : Glove :: Foot : ?
(A) Sock (B) Hat (C) Belt (D) Shirt
- Riya is 12th from the front and 19th from the back of a queue. How many people are in the queue?
(A) 32 (B) 30 (C) 29 (D) 31
- Find the next letters: AB, DE, GH, JK, ...
(A) MN (B) LM (C) NO (D) OP
- P is Q's brother. Q is R's mother. P is R's:
(A) Son (B) Father (C) Grandfather (D) Maternal uncle
- Select the next shape in the repeating pattern: ○, △, □, ○, △, □, ○, ...
(A) △ (B) ◇ (C) ○ (D) □
- All pilots are trained. No trained person is careless. Which conclusion must follow?
(A) All trained people are pilots (B) All careful people are pilots (C) Some pilots are careless (D) No pilot is careless
- If + means multiplication and × means addition, evaluate $3 + 4 \times 2$ using the actual operations.
(A) 18 (B) 24 (C) 20 (D) 14
- A clock shows 3:00. The smaller angle between its hands is:
(A) 180° (B) 90° (C) 60° (D) 120°

13. Four people stand in order P, Q, R, S from left to right. Q and S exchange positions. Who is immediately to the left of R?
(A) Q (B) P (C) S (D) R

14. Find the missing number: $(2,3) \rightarrow 13$; $(3,4) \rightarrow 25$; $(4,5) \rightarrow ?$ The same rule applies.
(A) 29 (B) 41 (C) 45 (D) 39

15. A cube's opposite face pairs are (1,6), (2,5), (3,4). If the top face is 2, the bottom face is:
(A) 1 (B) 5 (C) 6 (D) 3

MATHEMATICAL REASONING

- Which number is irrational?
(A) $\frac{3}{4}$ (B) 0.125 (C) $\sqrt{49}$ (D) $\sqrt{7}$
- The square of $\sqrt{5}$ is:
(A) $\sqrt{10}$ (B) 10 (C) 25 (D) 5
- The rationalised form of $\frac{1}{\sqrt{3}}$ is:
(A) $\frac{\sqrt{3}}{3}$ (B) $\frac{1}{3}$ (C) $\frac{3\sqrt{3}}{3}$ (D) $\sqrt{3}$
- The value of $2^3 \times 2^4$ is:
(A) 32 (B) 64 (C) 256 (D) 128
- If $x = 2$, the value of $x^2 - 3x + 4$ is:
(A) 2 (B) 6 (C) 0 (D) 4
- The factorisation of $x^2 - 9$ is:
(A) $(x - 9)(x + 1)$ (B) $(x + 3)^2$ (C) $(x - 3)^2$ (D) $(x - 3)(x + 3)$
- The remainder when $x^3 + 2x + 1$ is divided by $x - 1$ is:
(A) 3 (B) 2 (C) 4 (D) 0
- The degree of $5x^4 - 3x^2 + 2$ is:
(A) 2 (B) 4 (C) 6 (D) 5
- Which ordered pair satisfies $2x + y = 7$?
(A) (1,3) (B) (0,6) (C) (3,2) (D) (2,3)
- The point (-3,4) lies in:
(A) Quadrant III (B) Quadrant IV (C) Quadrant I (D) Quadrant II

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26. A point on the y-axis has:
(A) Both coordinates positive (B) Equal non-zero coordinates (C) y-coordinate 0 (D) x-coordinate 0

27. If two parallel lines are cut by a transversal, corresponding angles are:
(A) Always 90° (B) Always unequal (C) Equal (D) Always complementary

28. The sum of angles of a quadrilateral is:
(A) 720° (B) 360° (C) 180° (D) 540°

29. A diagonal of a parallelogram divides it into:
(A) Four equal circles (B) Two congruent triangles (C) Two equilateral triangles always (D) Two unequal-area triangles

30. The area of a triangle of base 12 cm and height 7 cm is:
(A) 84 cm^2 (B) 19 cm^2 (C) 21 cm^2 (D) 42 cm^2

31. A circle of radius 7 cm has circumference, using $\pi = 22/7$:
(A) 44 cm (B) 22 cm (C) 49 cm (D) 154 cm

32. A cube of side 4 cm has total surface area:
(A) 48 cm^2 (B) 16 cm^2 (C) 96 cm^2 (D) 64 cm^2

33. The volume of a cylinder of radius 3 cm and height 5 cm is:
(A) $30\pi \text{ cm}^3$ (B) $45\pi \text{ cm}^3$ (C) $90\pi \text{ cm}^3$ (D) $15\pi \text{ cm}^3$

34. The median of 4, 7, 9, 12, 15 is:
(A) 10 (B) 12 (C) 9 (D) 7

35. A fair die is thrown once. Probability of a number greater than 4 is:
(A) $1/6$ (B) $1/3$ (C) $2/3$ (D) $1/2$

EVERYDAY MATHEMATICS

36. A ₹500 item is sold at a 20% discount. The selling price is:
(A) ₹480 (B) ₹450 (C) ₹400 (D) ₹300

37. A bicycle bought for ₹2,000 is sold for ₹2,300. The profit percentage is:
(A) 10% (B) 30% (C) 15% (D) 20%

38. Simple interest on ₹4,000 at 5% per year for 2 years is:
(A) ₹200 (B) ₹400 (C) ₹4,400 (D) ₹800

39. A car covers 150 km in 3 hours. Its average speed is:
(A) 50 km/h (B) 75 km/h (C) 60 km/h (D) 45 km/h

40. On a map, 1 cm represents 2 km. A 6.5 cm route represents:
(A) 3.25 km (B) 26 km (C) 6.5 km (D) 13 km

41. A garden measures 20 m by 12 m. A fence around its boundary costs ₹50 per metre. The total cost is:
(A) ₹1,600 (B) ₹12,000 (C) ₹3,200 (D) ₹2,400

42. A cuboidal tank measures 2 m $\times$ 1 m $\times$ 0.5 m. Its capacity is:
(A) 1,000 L (B) 100 L (C) 2,000 L (D) 500 L

43. A triangular plot has perpendicular sides 15 m and 8 m. Its area is:
(A) 120 m^2 (B) 23 m^2 (C) 30 m^2 (D) 60 m^2

44. Five scores have mean 18. Four scores are 12, 16, 20 and 22. The fifth score is:
(A) 22 (B) 20 (C) 24 (D) 18

45. A bag contains 3 red and 2 blue marbles. Two more blue marbles are added. Probability of drawing blue is now:
(A) $4/7$ (B) $3/7$ (C) $4/5$ (D) $2/5$

ACHIEVERS SECTION (3 MARKS EACH)

46. If $a + b = 7$ and $ab = 10$, then $a^3 + b^3$ equals:
(A) 133 (B) 203 (C) 343 (D) 123

47. The sides of a triangle are 13, 14 and 15 cm. Its area is:
(A) 91 cm^2 (B) 84 cm^2 (C) 42 cm^2 (D) 105 cm^2

48. In a circle of radius 5 cm, a chord has length 8 cm. Its perpendicular distance from the centre is:
(A) 2 cm (B) 4 cm (C) $\sqrt{41}$ cm (D) 3 cm

49. For which value of k is $x - 2$ a factor of $x^3 - 4x^2 + kx + 6$?
(A) 2 (B) 1 (C) -1 (D) 3

50. A cone and cylinder have equal base radii and equal volumes. If the cylinder's height is 6 cm, the cone's height is:
(A) 12 cm (B) 6 cm (C) 2 cm (D) 18 cm