STUDENT COPY · SET B

Class 8 · Mathematics Olympiad

Total questions	Total marks	Time	Negative marking
50	60	60 minutes	None

Name: _____ Class/Section: _____ Roll no: _____

Each question has four options, of which only one is correct. Mark your answer on the answer sheet. The Achievers Section carries higher marks per question. Your teacher has the answers.
This is original practice material written to the Level 1 pattern. It is not a past paper and is not affiliated with SOF or any official olympiad body.

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Logical Reasoning

15 questions · 1 mark each · 15 marks

Q1. Read the statements and choose the conclusion that MUST be true.
Every student in the class has a pencil. Rahul is a student in the class.

(A) Rahul has no pencil.
(B) Some students have no pencil.
(C) Only Rahul has a pencil.
(D) Rahul has a pencil.

Q2. Sima walks 7 m north, then 4 m east, then 2 m south. Where is Sima now, relative to the starting point?

(A) 6 m north and 4 m east
(B) 5 m north and 4 m east
(C) 7 m north and 4 m east
(D) 5 m north and 5 m east

Q3. All but one of these numbers are multiples of the same number. Find the one that is not: 30, 36, 50, 60, 66

(A) 50 (B) 30 (C) 66 (D) 36

Q4. In a class, 23 students play cricket, 22 play football and 8 play both games. Every student plays at least one of the two. How many students are there in the class?

(A) 45 (B) 38 (C) 29 (D) 37

Q5. 10 : 100 :: 7 : ___

(A) 14 (B) 36 (C) 64 (D) 49

Q6. Pointing to a boy in a photograph, Anjali said, “This boy is not me, but he is the son of my paternal grandfather’s only son.” How is the boy related to Anjali?

(A) Cousin (B) Uncle (C) Nephew (D) Brother

Q7. In a row of 35 children, Sana is 9th from the left end. What is Sana’s position from the right end?

(A) 26th (B) 27th (C) 28th (D) 29th

Q8. If JAR is written as 10 - 1 - 18 using the positions of the letters in the alphabet, how is BAG written?

(A) 3 - 2 - 8 (B) 25 - 26 - 20 (C) 2 - 1 - 7 (D) 7 - 1 - 2

Q9. If the 8th of a month is a Saturday, what day of the week is the 24th of the same month?

(A) Sunday (B) Wednesday (C) Tuesday (D) Monday

Q10. Find the next number in the pattern: 2, 5, 11, 23, ___

(A) 46 (B) 47 (C) 48 (D) 45

Q11. Which letter comes next? C, E, H, L, ___

(A) O (B) R (C) Q (D) P

Q12. Five friends A, B, C, D and E sit in a row of five seats. A sits at the extreme left end, D sits at the extreme right end, C sits exactly in the middle and B sits between A and C. Who sits in the fourth seat from the left?

(A) D (B) E (C) B (D) C

Q13. In a queue, Farah is 5th from the front and 12th from the back. How many people are in the queue altogether?

(A) 18 (B) 16 (C) 17 (D) 15

Q14. Which letter comes next? F, I, L, O, ___

(A) R (B) Q (C) U (D) S

Q15. A father is 25 years older than his son. The son is 8 years old now. How old will the father be after 8 years?

(A) 49 years (B) 33 years (C) 41 years (D) 42 years

Mathematical Reasoning

20 questions · 1 mark each · 20 marks

Q16. If a = -3/4 and b = 5/6, what is a ÷ b + b ÷ a?

(A) -109/90 (B) -19/18 (C) 1/90 (D) -181/90

Q17. Which condition alone is NOT sufficient to prove a quadrilateral is a parallelogram?

(A) One opposite pair is equal and parallel (B) Diagonals bisect each other

(C) Its diagonals are equal (D) Opposite sides are equal

Q18. A card is chosen from numbers 1 to 30. What is the probability that it shows a multiple of 3 but not a multiple of 6?

(A) 1/2 (B) 1/3 (C) 1/6 (D) 1/5

Q19. If $0.064 = a^3$, what is cube root of 64000?

(A) 4 (B) 20 (C) 40 (D) 400

Q20. What is the smallest number to be added to 2025 to get a square number greater than 2025?

(A) 91 (B) 0 (C) 90 (D) 181

Q21. What is the smallest whole number by which 432 must be divided to get a perfect cube?

(A) 2 (B) 16 (C) 4 (D) 6

Q22. A number decreased by its 1/4 is 18 more than its 1/3. The number is...

(A) 108/5 (B) 54 (C) 216/5 (D) 72/5

Q23. Rina pays ₹2000 plus 10% compound interest yearly for 2 years. A 5% tax is added on the interest only. What does she pay?

(A) ₹2400 (B) ₹2421 (C) ₹2420 (D) ₹2441

Q24. Which rational number is exactly halfway between -5/6 and -3/4?

(A) -9/10 (B) -1/24 (C) -19/24 (D) -19/12

Q25. For non-zero rational a and b, define a * b = a ÷ b + b ÷ a. What is (-2/3) * (3/4)?

(A) 145/72 (B) -17/72 (C) -145/72 (D) -72/145

Q26. What is the smallest positive integer by which 1350 must be divided to make it a perfect cube?

(A) 25 (B) 10 (C) 50 (D) 2

Q27. Solve: 3(2x - 5) - 2(x + 1) = 4x - 9.

(A) x = 2 (B) Every value of x

(C) x = 0 (D) No value of x

Q28. A cuboid 8 cm × 6 cm × 5 cm is painted outside and cut into 1 cm cubes. How many small cubes have paint on exactly two faces?

(A) 24 (B) 52 (C) 76 (D) 60

Q29. When a number is tripled and 7 is subtracted, the result equals 5 more than half the number. What is the number?

(A) 24/5 (B) 12/5 (C) 5 (D) 4

Q30. Which expression is equal to $(2x - 3)^2 - (2x + 3)^2$?

(A) 24x (B) -12x

(C) $4x^2 - 9$ (D) -24x

Q31. A(2, 3), B(2, -1) and C(-4, -1) are three consecutive vertices of a rectangle ABCD. What is D?

(A) (4, 3) (B) (-4, -3) (C) (2, 1) (D) (-4, 3)

Q32. If p + q = 9 and pq = 14, what is $p^2 + q^2$?

(A) 109 (B) 95 (C) 67 (D) 53

Q33. Data: 6, 8, 8, 9, 10, 11, 11, 11. If one 11 is changed to 7, what happens?

(A) Median decreases by 1; modes are 8 and 11 (B) Median increases by 1; modes are 8 and 11

(C) Median same; mode is 11 only (D) Median decreases by 1; mode is 8 only

Q34. A quadrilateral has both pairs of opposite sides parallel, all sides equal, but diagonals unequal. It is certainly a...

(A) rhombus (B) square

(C) isosceles trapezium (D) rectangle

Q35. A 22 cm × 14 cm sheet is rolled so the 22 cm side becomes the circular rim. With π=22/7, what is the cylinder's volume?

(A) 539 cm^3 (B) 5324 cm^3

(C) 847 cm^3 (D) 2156 cm^3

Everyday Mathematics

10 questions · 1 mark each · 10 marks

Q36. A recipe uses ¾ cup sugar for 6 laddus. Rani makes 10 laddus but has already put 1 cup sugar. How much more sugar is needed?

(A) ¼ cup (B) 1/8 cup (C) ¾ cup (D) ½ cup

Q37. A floor tile is a parallelogram. One angle is 65°. What is the difference between its adjacent angle and its opposite angle?

(A) 50° (B) 115° (C) 130° (D) 65°

Q38. Six equal taps fill a tank in 14 hours. If 2 taps are closed, how long will the remaining taps take?

(A) 28 hours (B) 18 hours (C) 91/3 hours (D) 21 hours

Q39. An auto charges ₹30 fixed fare plus ₹12 per km. Riya paid ₹126. How far did she travel?

(A) 10.5 km (B) 13 km (C) 9 km (D) 8 km

Q40. A rectangular rangoli has area $x^2 + 7x + 12$ m^2. If one side is $x + 3$ m, what is the other side?

(A) $x + 12$ m (B) $x + 9$ m

(C) $x + 4$ m (D) $x^2 + 4x$ m

Q41. A rectangular banner is $(x+3)$ cm long and $(x−3)$ cm wide. For $x=20$, what is its area?

(A) 409 cm^2 (B) 391 cm^2

(C) 340 cm^2 (D) 400 cm^2

Q42. A bag has 5 red, 3 blue and 2 green buttons. One button is picked without looking. What is the probability that it is not blue?

(A) 5/10 (B) 3/10 (C) 2/10 (D) 7/10

Q43. Meena deposits ₹8000 at 10% per annum compounded annually for 2 years. What compound interest does she earn?

(A) ₹1600 (B) ₹1680 (C) ₹9680 (D) ₹800

Q44. On a distance-time graph, Asha's walk is a straight line from (0,0) to (4,12), with time in hours and distance in km. What speed is shown?

(A) 12 km/h (B) 3 km/h (C) 4 km/h (D) 16 km/h

Q45. On a straight-line distance-time graph, a cyclist's points are (0,0), (1,12), (2,24), (3,36). What distance at 4.5 h?

(A) 48 km (B) 42 km (C) 60 km (D) 54 km

Achievers Section

5 questions · 3 marks each · 15 marks

Q46. 6 equal taps fill a tank in 8 h. After all 6 run for 2 h, 2 taps are closed. How much more time is needed to fill the tank?

(A) 10 h (B) 6 h (C) 9 h (D) 8 h

Q47. A pen and a notebook cost ₹58 together. The notebook costs ₹10 more than twice the pen. What is the cost of the pen?

(A) ₹14 (B) ₹18 (C) ₹16 (D) ₹24

Q48. A cubical box has volume 0.512 m^3. It is filled exactly by small cubes of edge 20 cm. How many small cubes are needed?

(A) 4 (B) 512 (C) 64 (D) 8

Q49. If x is non-zero and $x + 1/x = 5$, what is $x^2 + 1/x^2$?

(A) 23 (B) 27 (C) 10 (D) 25

Q50. A card is chosen from cards numbered 1 to 30. What is the probability that the number is a perfect square or a multiple of 7?

(A) 7/30 (B) 1/3 (C) 3/10 (D) 2/5

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