

Class 10 · Mathematics Olympiad

Total questions 50	Total marks 60	Time 60 minutes	Negative marking None
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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. The answer key with full solutions is at the end of this paper.

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.

Logical Reasoning

15 questions · 1 mark each · 15 marks

Q1. Three of the following four are alike and form a group. Which one does NOT belong?

- (A) Chair (B) Bus (C) Truck (D) Train

Q2. Anita walks 3 m towards north, turns right and walks 2 m, then turns right again and walks 3 m. How far is Anita from the starting point, and in which direction?

- (A) 3 m, East (B) 2 m, West (C) 5 m, North (D) 2 m, East

Q3. A father is 14 years older than his son. The son is 13 years old now. How old will the father be after 2 years?

- (A) 30 years (B) 31 years (C) 27 years (D) 29 years

Q4. Find the next number in the pattern: 4, 10, 22, 46, ____

- (A) 94 (B) 95 (C) 96 (D) 92

Q5. In a row of 26 children, Arjun is 9th from the left end. What is Arjun's position from the right end?

- (A) 17th (B) 20th (C) 19th (D) 18th

Q6. Arun walks 7 m north, then 8 m east, then 2 m south. Where is Arun now, relative to the starting point?

- (A) 7 m north and 8 m east (B) 5 m north and 8 m east
(C) 5 m north and 9 m east (D) 6 m north and 8 m east

Q7. If RAT is written as 18 - 1 - 20 using the positions of the letters in the alphabet, how is SUN written?

- (A) 8 - 6 - 13 (B) 20 - 22 - 15 (C) 14 - 21 - 19 (D) 19 - 21 - 14

Q8. Which one does NOT belong with the others?

- (A) Crow (B) Parrot (C) Bat (D) Sparrow

Q9. Pointing to a boy in a photograph, Rahul said, "He is the son of my paternal grandfather's only son." How is the boy related to Rahul?

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

Q10. Which letter comes next? M, O, Q, S, ____

- (A) W (B) V (C) U (D) T

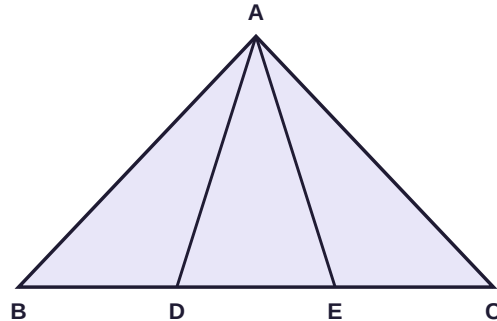
Q11. In a queue, Farah is 7th from the front and 9th from the back. How many people are in the queue altogether?

- (A) 17 (B) 14 (C) 15 (D) 16

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) B (C) C (D) E

Q13. How many triangles are there in the given figure?

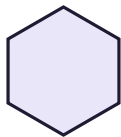


- (A) 7 (B) 6 (C) 8 (D) 5

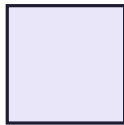
Q14. In a class, 17 students play cricket, 16 play football and 3 play both games. Every student plays at least one of the two. How many students are there in the class?

- (A) 33 (B) 27 (C) 31 (D) 30

Q15. Which of these figures has exactly 4 lines of symmetry?



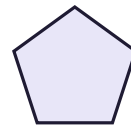
(A)



(B)



(C)



(D)

Mathematical Reasoning

20 questions · 1 mark each · 20 marks

Q16. Round 15,093 to the nearest thousand.

- (A) 14,000 (B) 15,000 (C) 15,100 (D) 16,000

Q17. The perimeter of a square is 112 cm. What is its area?

- (A) 784 sq cm (B) 112 sq cm (C) 841 sq cm (D) 812 sq cm

Q18. What is the place value of 3 in the number 32,59,65,912?

- (A) 3,00,00,00,000 (B) 30,00,00,000
(C) 3 (D) 3,00,00,000

Q19. $3,50,163 - 81,112 = ?$

- (A) 2,79,051 (B) 2,69,051 (C) 2,69,151 (D) 2,69,041

Q20. $464 \times 36 = ?$

- (A) 17,168 (B) 16,804 (C) 16,704 (D) 16,668

Q21. $3 \text{ L } 150 \text{ mL} \times 5 = ?$

- (A) 16 L 750 mL (B) 15 L 650 mL (C) 15 L 750 mL (D) 15 L 850 mL

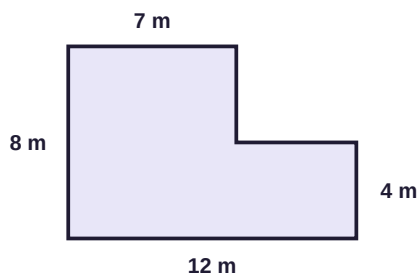
Q22. At 6 a.m. the temperature was 25°C . By noon it had risen by 5°C , and by night it had fallen by 4°C . What was the temperature at night?

- (A) 24°C (B) 26°C (C) 30°C (D) 28°C

Q23. $\frac{3}{4} + \frac{4}{12} = ?$

- (A) $1 \frac{1}{12}$ (B) $1 \frac{1}{6}$ (C) $1 \frac{7}{12}$ (D) $\frac{5}{6}$

Q24. The figure shows a plot of land. What is its area?



- (A) 76 sq m (B) 96 sq m (C) 71 sq m (D) 80 sq m

Q25. Which of these fractions is the greatest?

- (A) $\frac{2}{3}$ (B) $\frac{7}{10}$ (C) $\frac{7}{12}$ (D) $\frac{3}{5}$

Q26. $57 - 16.81 = ?$

- (A) 40.29 (B) 40.09 (C) 40.19 (D) 41.19

Q27. $8.2 \text{ km} = \underline{\hspace{1cm}} \text{ m}$

- (A) 820 (B) 82 (C) 82,000 (D) 8,200

Q28. $4 \text{ kg } 350 \text{ g} - 1 \text{ kg } 160 \text{ g} = ?$

- (A) 3 kg 130 g (B) 4 kg 190 g (C) 3 kg 290 g (D) 3 kg 190 g

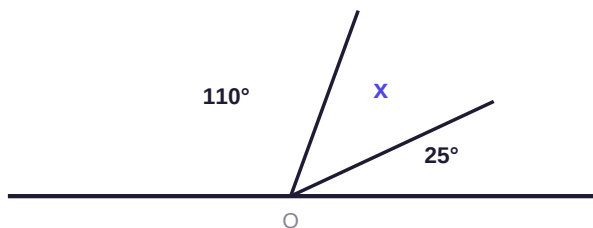
Q29. $17,394 \div 39 = ?$

- (A) 456 (B) 447 (C) 446 (D) 436

Q30. What is the smallest number that can be divided exactly by both 9 and 10?

- (A) 90 (B) 10 (C) 45 (D) 100

Q31. In the given figure, find the value of x.



- (A) 70° (B) 35° (C) 55° (D) 45°

Q32. Find the next number: 2, 6, 12, 20, 30, ____

(A) 44

(B) 48

(C) 42

(D) 40

Q33. Round 94,890 to the nearest thousand.

(A) 95,000

(B) 96,000

(C) 94,900

(D) 94,000

Q34. The perimeter of a square is 96 cm. What is its area?

(A) 96 sq cm

(B) 600 sq cm

(C) 625 sq cm

(D) 576 sq cm

Q35. What is the place value of 7 in the number 59,79,38,686?

(A) 7,00,00,000

(B) 7,00,000

(C) 7

(D) 70,00,000

Everyday Mathematics

10 questions · 1 mark each · 10 marks

Q36. A water tank holds 400 litres. If $\frac{2}{8}$ of the water is used, how much water is left?

(A) 275 L

(B) 325 L

(C) 300 L

(D) 100 L

Q37. A book has 189 pages. Ritu reads 43 pages every day for 4 days. How many pages are still left?

(A) 17

(B) 12

(C) 172

(D) 22

Q38. A shopkeeper sells 13 kg of rice at ₹ 90 per kg. How much money does he receive?

(A) ₹ 1,070

(B) ₹ 1,270

(C) ₹ 1,170

(D) ₹ 1,183

Q39. A train leaves at 7:20 a.m. and reaches its destination at 3:19 p.m. on the same day. How long is the journey?

(A) 6 h 59 min

(B) 8 h 59 min

(C) 7 h 49 min

(D) 7 h 59 min

Q40. A rope 14.4 m long is cut into pieces each 60 cm long. How many complete pieces are obtained?

(A) 29

(B) 24

(C) 22

(D) 26

Q41. In a class of 48 students, $\frac{3}{8}$ are girls. How many boys are there?

(A) 35

(B) 30

(C) 18

(D) 25

Q42. One dozen pens cost ₹ 120. What is the cost of 6 pens?

(A) ₹ 50

(B) ₹ 70

(C) ₹ 60

(D) ₹ 80

Q43. An auto charges ₹ 25 for the first kilometre and ₹ 10 for every kilometre after that. What is the fare for a journey of 6 km?

(A) ₹ 85

(B) ₹ 75

(C) ₹ 76

(D) ₹ 65

Q44. A wall is 3 m long and 4 m high. How many square tiles of side 20 cm are needed to cover it completely?

(A) 312

(B) 150

(C) 600

(D) 300

Q45. A water tank holds 400 litres. If $\frac{3}{5}$ of the water is used, how much water is left?

(A) 135 L

(B) 240 L

(C) 160 L

(D) 185 L

Achievers Section

5 questions · 3 marks each · 15 marks

Q46. Rahul finished the puzzle in two minutes and said it was 'to hit the nail on the head'. What did he mean?

- (A) to miss a chance (B) to hurt oneself
(C) to build a house (D) to say exactly the right thing

Q47. Using each of the digits 0, 1, 8, 3 exactly once, what is the smallest 4-digit number that can be formed?

- (A) 1038 (B) 8310 (C) 0138 (D) 1047

Q48. The clock in the figure shows 6:30. What is the angle between the hour hand and the minute hand?



- (A) 45° (B) 15° (C) 0° (D) 30°

Q49. How many numbers between 60 and 80 leave a remainder of 2 when divided by 6?

- (A) 5 (B) 4 (C) 3 (D) 2

Q50. Find the next number: 1, 3, 7, 13, 21, ____

- (A) 33 (B) 32 (C) 29 (D) 31

Answer Key

1	2	3	4	5	6	7	8	9	10
A	D	D	A	D	B	D	C	A	C
11	12	13	14	15	16	17	18	19	20
C	D	B	D	B	B	A	B	B	C
21	22	23	24	25	26	27	28	29	30
C	B	A	A	B	C	D	D	C	A
31	32	33	34	35	36	37	38	39	40
D	C	A	D	D	C	A	C	D	B
41	42	43	44	45	46	47	48	49	50
B	C	B	D	C	D	A	B	C	D

Solutions

Q1. (A) Bus, Train, Truck are all vehicles; Chair is not.

- Q2. (D) The two 3 m walks (north, then south) cancel out, leaving only the 2 m walked towards the east. So the answer is 2 m, East.
- Q3. (D) The father is $13 + 14 = 27$ now, so after 2 years he will be $27 + 2 = 29$ years.
- Q4. (A) Each number is doubled and 2 is added: $46 \times 2 + 2 = 94$.
- Q5. (D) Position from the right = total - position from the left + 1 = $26 - 9 + 1 = 18$ th.
- Q6. (B) The 2 m south cancels part of the 7 m north, leaving $7 - 2 = 5$ m north, and the 8 m east is unchanged. So Arun is 5 m north and 8 m east.
- Q7. (D) S is letter 19 and U is letter 21 and N is letter 14, so $SUN = 19 - 21 - 14$.
- Q8. (C) Bat is a mammal, not a bird.
- Q9. (A) Rahul's paternal grandfather's only son is Rahul's own father, so that man's son is Rahul's own sibling. The answer is Brother.
- Q10. (C) Each letter moves 2 place(s) forward in the alphabet, so after S comes U.
- Q11. (C) Counting Farah only once: $7 + 9 - 1 = 15$ people.
- Q12. (D) Seat 1 = A, seat 3 = C, seat 5 = D. B must be between A and C, so B takes seat 2, and the only friend left for seat 4 is E.
- Q13. (B) Every triangle has apex A and two of the 4 base points as its other corners. Choosing 2 from 4 gives 6 triangles.
- Q14. (D) $17 + 16 - 3 = 30$. The 3 who play both were counted twice, so they are subtracted once.
- Q15. (B) Counting lines of symmetry: regular hexagon has 6, square has 4, rectangle has 2, regular pentagon has 5. The answer is figure (B).
- Q16. (B) The hundreds digit is 0, so we round down to 15,000.
- Q17. (A) Side = $112 / 4 = 28$ cm, so area = $28 \times 28 = 784$ sq cm.
- Q18. (B) The digit 3 stands in the 10,00,00,000 place, so its place value is 30,00,00,000.
- Q19. (B) $3,50,163 - 81,112 = 2,69,051$.
- Q20. (C) $464 \times 36 = 464 \times 30 + 464 \times 6 = 13,920 + 2,784 = 16,704$.
- Q21. (C) 3 L 150 mL = 3,150 mL. $3,150 \times 5 = 15,750$ mL = 15 L 750 mL.
- Q22. (B) $25 + 5 = 30$, then $30 - 4 = 26^\circ\text{C}$.
- Q23. (A) Make the denominators the same (12): $3/4 = 9/12$ and $4/12 = 4/12$. Adding gives $13/12 = 1 \frac{1}{12}$.
- Q24. (A) The missing corner is $(12 - 7) = 5$ m wide and $(8 - 4) = 4$ m tall. Take the full rectangle $12 \text{ m} \times 8 \text{ m} = 96$ sq m and subtract that corner, $5 \text{ m} \times 4 \text{ m} = 20$ sq m. $96 - 20 = 76$ sq m.
- Q25. (B) As decimals: $7/12 = 0.583$, $7/10 = 0.700$, $3/5 = 0.600$, $2/3 = 0.667$. The greatest is $7/10$.
- Q26. (C) Write 57 as 57.00, then $57.00 - 16.81 = 40.19$.
- Q27. (D) 1 km = 1,000 m, so $8.2 \text{ km} = 8.2 \times 1,000 = 8,200$ m.
- Q28. (D) 4 kg 350 g = 4,350 g and 1 kg 160 g = 1,160 g. $4,350 - 1,160 = 3,190$ g = 3 kg 190 g.
- Q29. (C) $39 \times 446 = 17,394$, so the quotient is 446.
- Q30. (A) Listing multiples of 9 and of 10, the first number that appears in both lists is 90.
- Q31. (D) The three angles lie on a straight line, so they add to 180° . $x = 180^\circ - 110^\circ - 25^\circ = 45^\circ$.
- Q32. (C) The gaps are 4, 6, 8, 10, so the next gap is 12 and $30 + 12 = 42$.
- Q33. (A) The hundreds digit is 8, so we round up to 95,000.
- Q34. (D) Side = $96 / 4 = 24$ cm, so area = $24 \times 24 = 576$ sq cm.
- Q35. (D) The digit 7 stands in the 10,00,000 place, so its place value is 70,00,000.
- Q36. (C) $2/8$ of 400 = 100 L is used, so $400 - 100 = 300$ L is left.
- Q37. (A) She reads $43 \times 4 = 172$ pages, so $189 - 172 = 17$ pages are left.
- Q38. (C) $13 \times 90 = ₹ 1,170$.
- Q39. (D) From 7:20 a.m. to 3:19 p.m. is 7 h 59 min.

- Q40. (B) $14.4 \text{ m} = 1,440 \text{ cm}$ and $1,440 / 60 = 24$ pieces.
- Q41. (B) $3/8$ of $48 = 18$ girls, so the number of boys is $48 - 18 = 30$.
- Q42. (C) One pen costs $120 / 12 = ₹ 10$, so 6 pens cost $6 \times 10 = ₹ 60$.
- Q43. (B) After the first kilometre there are 5 more: $25 + 5 \times 10 = ₹ 75$.
- Q44. (D) The wall is $300 \text{ cm} \times 400 \text{ cm} = 1,20,000 \text{ sq cm}$. Each tile is $20 \times 20 = 400 \text{ sq cm}$. $1,20,000 / 400 = 300$ tiles.
- Q45. (C) $3/5$ of $400 = 240 \text{ L}$ is used, so $400 - 240 = 160 \text{ L}$ is left.
- Q46. (D) In this sentence 'to hit the nail on the head' means to say exactly the right thing.
- Q47. (A) A 4-digit number cannot begin with 0, so the smallest possible first digit is 1. The remaining digits are then placed in increasing order: 1038.
- Q48. (B) The minute hand is at 180° from 12 and the hour hand at 195° from 12, so the angle between them is 15° .
- Q49. (C) The numbers are 62, 68, 74 — 3 of them.
- Q50. (D) The gaps grow 2, 4, 6, 8, so the next gap is 10 and $21 + 10 = 31$.

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