

Class 7 · 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.

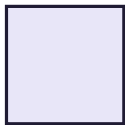
Logical Reasoning

15 questions · 1 mark each · 15 marks

Q1. In the first row the numbers are 6, 7 and 43. In the second row they are 5, 2 and 27. In the third row they are 2, 8 and ____ . The same rule applies to every row.

- (A) 13 (B) 12 (C) 11 (D) 14

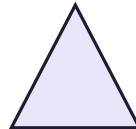
Q2. Which of these figures has exactly 3 lines of symmetry?



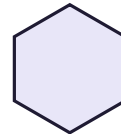
(A)



(B)



(C)



(D)

Q3. Find the odd one out: 6, 9, 20, 21, 24

- (A) 9 (B) 20 (C) 21 (D) 6

Q4. Which one does NOT belong with the others?

- (A) Circle (B) Triangle (C) Rectangle (D) Pentagon

Q5. A father is 22 years older than his son. The son is 9 years old now. How old will the father be after 7 years?

- (A) 38 years (B) 39 years (C) 45 years (D) 31 years

Q6. Which letter comes next? G, J, M, P, ____

- (A) S (B) R (C) V (D) T

Q7. In a certain code BUS is written as EXV. How is MAP written in that code?

- (A) QET (B) PDS (C) JXM (D) SDP

Q8. 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) C (B) B (C) E (D) D

Q9. $5 : 25 :: 13 : \underline{\hspace{1cm}}$

- (A) 144 (B) 26 (C) 196 (D) 169

Q10. Find the next number in the pattern: 5, 12, 26, 54, ____

- (A) 110 (B) 108 (C) 111 (D) 112

Q11. In a class, 17 students play cricket, 22 play football and 7 play both games. Every student plays at least one of the two. How many students are there in the class?

- (A) 32 (B) 25 (C) 33 (D) 39

Q12. Hunger : Food :: Thirst : ____

- (A) Sleep (B) Air (C) Water (D) Shade

Q13. Which word would come FIRST in a dictionary?

- (A) metal (B) melon (C) mother (D) marble

Q14. Arun walks 4 m north, then 6 m east, then 2 m south. Where is Arun now, relative to the starting point?

- (A) 3 m north and 6 m east (B) 2 m north and 6 m east
(C) 2 m north and 7 m east (D) 4 m north and 6 m east

Q15. Pointing to a boy in a photograph, Vikram said, "He is the son of my paternal grandfather's only son." How is the boy related to Vikram?

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

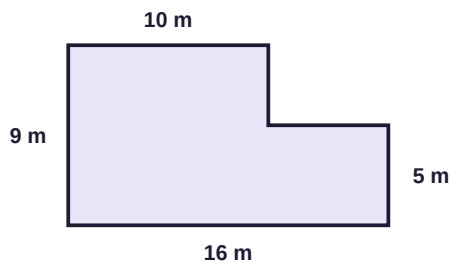
Mathematical Reasoning

20 questions · 1 mark each · 20 marks

Q16. $4,08,424 - 3,52,595 = ?$

- (A) 55,829 (B) 55,929 (C) 55,819 (D) 56,829

Q17. The figure shows a plot of land. What is its area?



- (A) 124 sq m (B) 120 sq m (C) 144 sq m (D) 114 sq m

Q18. The perimeter of a square is 96 cm. What is its area?

- (A) 576 sq cm (B) 625 sq cm (C) 600 sq cm (D) 96 sq cm

Q19. $5.5 \text{ km} = \underline{\hspace{2cm}} \text{ m}$

- (A) 55,000 (B) 550 (C) 55 (D) 5,500

Q20. Round 11,040 to the nearest thousand.

- (A) 11,000 (B) 12,000 (C) 11,001 (D) 10,000

Q21. $\frac{1}{2} + \frac{9}{12} = ?$

- (A) $1 \frac{1}{4}$ (B) $1 \frac{1}{3}$ (C) $\frac{3}{4}$ (D) $1 \frac{3}{4}$

Q22. $400 \times 18 = ?$

- (A) 7,200 (B) 7,600 (C) 7,300 (D) 7,182

Q23. At 6 a.m. the temperature was 21°C . By noon it had risen by 9°C , and by night it had fallen by 6°C . What was the temperature at night?

- (A) 24°C (B) 22°C (C) 26°C (D) 30°C

Q24. $85 - 42.76 = ?$

- (A) 42.24 (B) 42.14 (C) 43.24 (D) 42.34

Q25. What is the smallest number that can be divided exactly by both 9 and 15?

- (A) 36 (B) 60 (C) 45 (D) 135

Q26. $2\text{ L } 750\text{ mL} \times 3 = ?$

- (A) 8 L 150 mL (B) 9 L 250 mL (C) 8 L 250 mL (D) 8 L 350 mL

Q27. $8,764 \div 28 = ?$

- (A) 313 (B) 303 (C) 323 (D) 314

Q28. Find the next number: 2, 6, 12, 20, 30, ____

- (A) 42 (B) 48 (C) 40 (D) 44

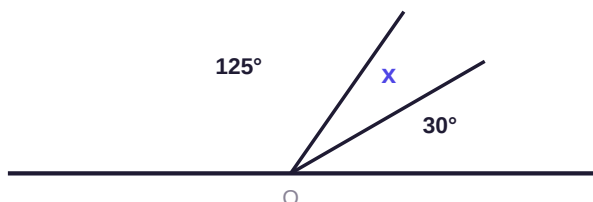
Q29. What is the place value of 2 in the number 3,72,50,570?

- (A) 20,00,000 (B) 20,000 (C) 2 (D) 2,00,000

Q30. Which of these fractions is the greatest?

- (A) $\frac{5}{8}$ (B) $\frac{2}{3}$ (C) $\frac{5}{6}$ (D) $\frac{4}{7}$

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



- (A) 35° (B) 55° (C) 15° (D) 25°

Q32. $3\text{ kg } 450\text{ g} - 2\text{ kg } 440\text{ g} = ?$

- (A) 1 kg 10 g (B) 0 kg 950 g (C) 2 kg 10 g (D) 1 kg 110 g

Q33. $2,10,357 - 53,320 = ?$

- (A) 1,57,027 (B) 1,67,037 (C) 1,57,137 (D) 1,57,037

Q34. The perimeter of a square is 84 cm. What is its area?

- (A) 462 sq cm (B) 84 sq cm (C) 484 sq cm (D) 441 sq cm

Q35. $4.1\text{ km} = \underline{\hspace{2cm}}\text{ m}$

- (A) 41,000 (B) 410 (C) 41 (D) 4,100

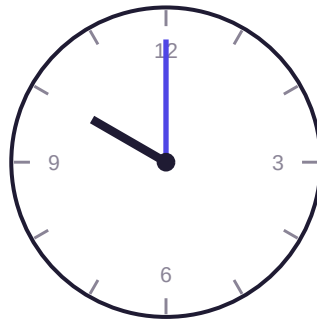
- Q36. A wall is 4 m long and 6 m high. How many square tiles of side 20 cm are needed to cover it completely?
- (A) 612 (B) 300 (C) 1200 (D) 600
- Q37. One dozen pens cost ₹ 96. What is the cost of 4 pens?
- (A) ₹ 32 (B) ₹ 40 (C) ₹ 24 (D) ₹ 48
- Q38. An auto charges ₹ 25 for the first kilometre and ₹ 10 for every kilometre after that. What is the fare for a journey of 12 km?
- (A) ₹ 136 (B) ₹ 125 (C) ₹ 135 (D) ₹ 145
- Q39. In a class of 16 students, $\frac{3}{4}$ are girls. How many boys are there?
- (A) 12 (B) 4 (C) 9 (D) -1
- Q40. A book has 145 pages. Ritu reads 16 pages every day for 7 days. How many pages are still left?
- (A) 112 (B) 28 (C) 38 (D) 33
- Q41. A rope 12.75 m long is cut into pieces each 75 cm long. How many complete pieces are obtained?
- (A) 15 (B) 19 (C) 22 (D) 17
- Q42. A water tank holds 400 litres. If $\frac{5}{8}$ of the water is used, how much water is left?
- (A) 250 L (B) 175 L (C) 150 L (D) 125 L
- Q43. A shopkeeper sells 10 kg of rice at ₹ 32 per kg. How much money does he receive?
- (A) ₹ 420 (B) ₹ 330 (C) ₹ 220 (D) ₹ 320
- Q44. A train leaves at 8:25 a.m. and reaches its destination at 4:01 p.m. on the same day. How long is the journey?
- (A) 6 h 36 min (B) 7 h 36 min (C) 8 h 36 min (D) 7 h 46 min
- Q45. A wall is 5 m long and 6 m high. How many square tiles of side 20 cm are needed to cover it completely?
- (A) 375 (B) 1500 (C) 750 (D) 762

Achievers Section

5 questions · 3 marks each · 15 marks

- Q46. Using each of the digits 7, 9, 4, 0 exactly once, what is the smallest 4-digit number that can be formed?
- (A) 4088 (B) 4079 (C) 0479 (D) 9740

Q47. The clock in the figure shows 10:00. What is the angle between the hour hand and the minute hand?

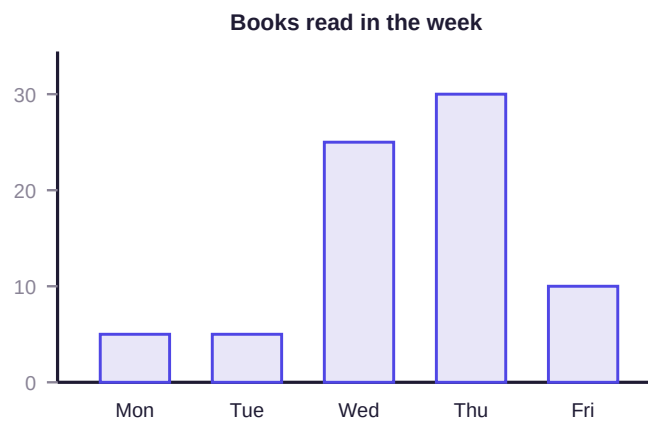


- (A) 75° (B) 45° (C) 90° (D) 60°

Q48. The average of 4 numbers is 27. 3 of them are 60, 25, 6. What is the remaining number?

- (A) 15 (B) 17 (C) 19 (D) 27

Q49. The bar graph shows the number of books read by a class on each day of one week. How many books were read in the whole week?



- (A) 85 (B) 70 (C) 80 (D) 75

Q50. Why is it safer to switch off a computer using the Shut Down option rather than pulling out the plug?

- (A) It saves electricity only (B) It makes the computer faster next time
(C) It cleans the screen (D) It closes files properly so data is not lost

Answer Key

1	2	3	4	5	6	7	8	9	10
B	C	B	A	A	A	B	C	D	A
11	12	13	14	15	16	17	18	19	20
A	C	D	B	C	A	B	A	D	A
21	22	23	24	25	26	27	28	29	30
A	A	A	A	C	C	A	A	D	C

31	32	33	34	35	36	37	38	39	40
D	A	D	D	D	D	A	C	B	D
41	42	43	44	45	46	47	48	49	50
D	C	D	B	C	B	D	B	D	D

Solutions

Q1. (B) The rule is: square the first number and add the second. Check: 6, 7 gives 43 and 5, 2 gives 27; so 2, 8 gives 12.

Q2. (C) Counting lines of symmetry: square has 4, rectangle has 2, equilateral triangle has 3, regular hexagon has 6. The answer is figure (C).

Q3. (B) Every other number is a multiple of 3. 20 is not.

Q4. (A) Circle has no straight sides.

Q5. (A) The father is $9 + 22 = 31$ now, so after 7 years he will be $31 + 7 = 38$ years.

Q6. (A) Each letter moves 3 place(s) forward in the alphabet, so after P comes S.

Q7. (B) Each letter moves 3 place(s) forward in the alphabet, so MAP becomes PDS.

Q8. (C) 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.

Q9. (D) The second number is the first multiplied by itself: $5 \times 5 = 25$, so $13 \times 13 = 169$.

Q10. (A) Each number is doubled and 2 is added: $54 \times 2 + 2 = 110$.

Q11. (A) $17 + 22 - 7 = 32$. The 7 who play both were counted twice, so they are subtracted once.

Q12. (C) The second word relates to the first in the same way Water relates to Thirst.

Q13. (D) In alphabetical order the words run marble, melon, metal, mother, so marble comes first.

Q14. (B) The 2 m south cancels part of the 4 m north, leaving $4 - 2 = 2$ m north, and the 6 m east is unchanged. So Arun is 2 m north and 6 m east.

Q15. (C) Vikram's paternal grandfather's only son is Vikram's own father, so that man's son is Vikram's own sibling. The answer is Brother.

Q16. (A) $4,08,424 - 3,52,595 = 55,829$.

Q17. (B) The missing corner is $(16 - 10) = 6$ m wide and $(9 - 5) = 4$ m tall. Take the full rectangle $16 \text{ m} \times 9 \text{ m} = 144$ sq m and subtract that corner, $6 \text{ m} \times 4 \text{ m} = 24$ sq m. $144 - 24 = 120$ sq m.

Q18. (A) Side = $96 / 4 = 24$ cm, so area = $24 \times 24 = 576$ sq cm.

Q19. (D) $1 \text{ km} = 1,000 \text{ m}$, so $5.5 \text{ km} = 5.5 \times 1,000 = 5,500 \text{ m}$.

Q20. (A) The hundreds digit is 0, so we round down to 11,000.

Q21. (A) Make the denominators the same (12): $1/2 = 6/12$ and $9/12 = 9/12$. Adding gives $15/12 = 1 \frac{1}{4}$.

Q22. (A) $400 \times 18 = 400 \times 10 + 400 \times 8 = 4,000 + 3,200 = 7,200$.

Q23. (A) $21 + 9 = 30$, then $30 - 6 = 24^\circ\text{C}$.

Q24. (A) Write 85 as 85.00, then $85.00 - 42.76 = 42.24$.

Q25. (C) Listing multiples of 9 and of 15, the first number that appears in both lists is 45.

Q26. (C) $2 \text{ L } 750 \text{ mL} = 2,750 \text{ mL}$. $2,750 \times 3 = 8,250 \text{ mL} = 8 \text{ L } 250 \text{ mL}$.

Q27. (A) $28 \times 313 = 8,764$, so the quotient is 313.

Q28. (A) The gaps are 4, 6, 8, 10, so the next gap is 12 and $30 + 12 = 42$.

Q29. (D) The digit 2 stands in the 1,00,000 place, so its place value is 2,00,000.

Q30. (C) As decimals: $5/6 = 0.833$, $5/8 = 0.625$, $2/3 = 0.667$, $4/7 = 0.571$. The greatest is $5/6$.

Q31. (D) The three angles lie on a straight line, so they add to 180° . $x = 180^\circ - 125^\circ - 30^\circ = 25^\circ$.

Q32. (A) $3 \text{ kg } 450 \text{ g} = 3,450 \text{ g}$ and $2 \text{ kg } 440 \text{ g} = 2,440 \text{ g}$. $3,450 - 2,440 = 1,010 \text{ g} = 1 \text{ kg } 10 \text{ g}$.

- Q33. (D) $2,10,357 - 53,320 = 1,57,037$.
- Q34. (D) Side = $84 / 4 = 21$ cm, so area = $21 \times 21 = 441$ sq cm.
- Q35. (D) $1 \text{ km} = 1,000 \text{ m}$, so $4.1 \text{ km} = 4.1 \times 1,000 = 4,100 \text{ m}$.
- Q36. (D) The wall is $400 \text{ cm} \times 600 \text{ cm} = 2,40,000 \text{ sq cm}$. Each tile is $20 \times 20 = 400 \text{ sq cm}$. $2,40,000 / 400 = 600$ tiles.
- Q37. (A) One pen costs $96 / 12 = ₹ 8$, so 4 pens cost $4 \times 8 = ₹ 32$.
- Q38. (C) After the first kilometre there are 11 more: $25 + 11 \times 10 = ₹ 135$.
- Q39. (B) $3/4$ of 16 = 12 girls, so the number of boys is $16 - 12 = 4$.
- Q40. (D) She reads $16 \times 7 = 112$ pages, so $145 - 112 = 33$ pages are left.
- Q41. (D) $12.75 \text{ m} = 1,275 \text{ cm}$ and $1,275 / 75 = 17$ pieces.
- Q42. (C) $5/8$ of 400 = 250 L is used, so $400 - 250 = 150$ L is left.
- Q43. (D) $10 \times 32 = ₹ 320$.
- Q44. (B) From 8:25 a.m. to 4:01 p.m. is 7 h 36 min.
- Q45. (C) The wall is $500 \text{ cm} \times 600 \text{ cm} = 3,00,000 \text{ sq cm}$. Each tile is $20 \times 20 = 400 \text{ sq cm}$. $3,00,000 / 400 = 750$ tiles.
- Q46. (B) A 4-digit number cannot begin with 0, so the smallest possible first digit is 4. The remaining digits are then placed in increasing order: 4079.
- Q47. (D) The minute hand is at 0° from 12 and the hour hand at 300° from 12, so the angle between them is 60° .
- Q48. (B) The 4 numbers add up to $27 \times 4 = 108$. The given numbers add up to 91, so the missing number is $108 - 91 = 17$.
- Q49. (D) $5 + 5 + 25 + 30 + 10 = 75$ books.
- Q50. (D) Shutting down lets the system finish writing files; cutting power can corrupt them. The answer is It closes files properly so data is not lost.

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