

# Class 5 · Mathematics Olympiad

|                       |                   |                    |                          |
|-----------------------|-------------------|--------------------|--------------------------|
| Total questions<br>50 | Total marks<br>60 | Time<br>60 minutes | Negative marking<br>None |
|-----------------------|-------------------|--------------------|--------------------------|

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 2, 7 and 13. In the second row they are 8, 8 and 63. In the third row they are 9, 5 and \_\_\_\_ . The same rule applies to every row.

- (A) 45 (B) 44 (C) 43 (D) 46

Q2.  $3 : 9 :: 5 : \underline{\hspace{1cm}}$

- (A) 25 (B) 16 (C) 36 (D) 10

Q3. Find the next number in the pattern: 4, 10, 22, 46, \_\_\_\_

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

Q4. Which letter comes next? G, I, L, P, \_\_\_\_

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

Q5. Three of the following four are alike and form a group. Which one does NOT belong?

- (A) Lily (B) Lotus (C) Rose (D) Ginger

Q6. If the 18th of a month is a Friday, what day of the week is the 31th of the same month?

- (A) Thursday (B) Friday (C) Saturday (D) Wednesday

Q7. In a class, 15 students play cricket, 16 play football and 5 play both games. Every student plays at least one of the two. How many students are there in the class?

- (A) 26 (B) 27 (C) 31 (D) 21

Q8. In a row of 24 children, Sana is 4th from the left end. What is Sana's position from the right end?

- (A) 22th (B) 21th (C) 23th (D) 20th

Q9. Find the odd one out: 30, 36, 45, 63, 81

- (A) 45 (B) 36 (C) 30 (D) 63

Q10. Book : Library :: Medicine : \_\_\_\_

- (A) Garage (B) Pharmacy (C) Studio (D) Bakery

Q11. Which word would come FIRST in a dictionary?

- (A) matter (B) melon (C) maple (D) minute

Q12. Which letter comes next? B, E, H, K, \_\_\_\_

- (A) O (B) M (C) Q (D) N

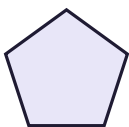
Q13. Arun walks 10 m north, then 6 m east, then 5 m south. Where is Arun now, relative to the starting point?

- (A) 10 m north and 6 m east (B) 6 m north and 6 m east  
(C) 5 m north and 7 m east (D) 5 m north and 6 m east

Q14. Which one does NOT belong with the others?

- (A) August (B) July (C) April (D) January

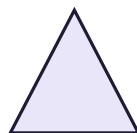
Q15. Which of these figures has exactly 4 lines of symmetry?



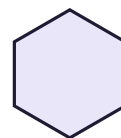
(A)



(B)



(C)



(D)

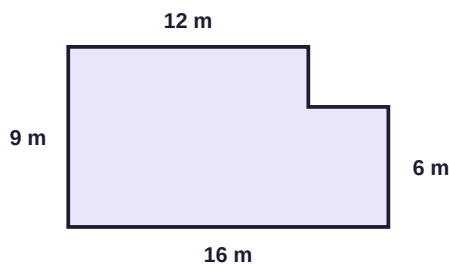
## Mathematical Reasoning

20 questions · 1 mark each · 20 marks

Q16. What is the smallest number that can be divided exactly by both 8 and 18?

- (A) 72 (B) 144 (C) 54 (D) 64

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



- (A) 132 sq m (B) 128 sq m (C) 135 sq m (D) 144 sq m

Q18. What is the place value of 1 in the number 93,97,169?

- (A) 1 (B) 10 (C) 1,000 (D) 100

Q19. Find the next number: 2, 6, 12, 20, 30, \_\_\_\_

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

Q20.  $4,393 \div 23 = ?$

- (A) 201 (B) 192 (C) 191 (D) 181

Q21. The perimeter of a square is 48 cm. What is its area?

- (A) 48 sq cm (B) 169 sq cm (C) 156 sq cm (D) 144 sq cm

Q22.  $356 \times 29 = ?$

- (A) 10,424 (B) 10,295 (C) 10,680 (D) 10,324

Q23. 9.6 km = \_\_\_\_\_ m

- (A) 96 (B) 96,000 (C) 9,600 (D) 960

Q24.  $1,87,326 - 81,489 = ?$

- (A) 1,05,937                      (B) 1,05,827                      (C) 1,05,837                      (D) 1,15,837

Q25. At 6 a.m. the temperature was  $19^{\circ}\text{C}$ . By noon it had risen by  $5^{\circ}\text{C}$ , and by night it had fallen by  $2^{\circ}\text{C}$ . What was the temperature at night?

- (A)  $20^{\circ}\text{C}$                       (B)  $23^{\circ}\text{C}$                       (C)  $24^{\circ}\text{C}$                       (D)  $22^{\circ}\text{C}$

Q26.  $\frac{1}{2} + \frac{9}{12} = ?$

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

Q27. Round 63,717 to the nearest thousand.

- (A) 65,000                      (B) 63,700                      (C) 64,000                      (D) 63,000

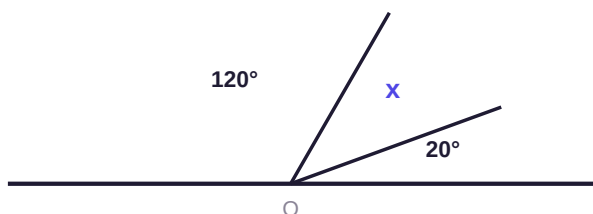
Q28.  $7\text{ L } 800\text{ mL} \times 5 = ?$

- (A) 40 L 0 mL                      (B) 38 L 900 mL                      (C) 39 L 0 mL                      (D) 39 L 100 mL

Q29. Which of these fractions is the greatest?

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

Q30. In the given figure, find the value of x.



- (A)  $60^{\circ}$                       (B)  $40^{\circ}$                       (C)  $30^{\circ}$                       (D)  $50^{\circ}$

Q31.  $61 - 54.53 = ?$

- (A) 6.37                      (B) 6.47                      (C) 6.57                      (D) 7.47

Q32.  $6\text{ kg } 50\text{ g} - 1\text{ kg } 480\text{ g} = ?$

- (A) 4 kg 570 g                      (B) 4 kg 670 g                      (C) 4 kg 510 g                      (D) 5 kg 570 g

Q33. What is the smallest number that can be divided exactly by both 12 and 15?

- (A) 120                      (B) 60                      (C) 30                      (D) 48

Q34. What is the place value of 9 in the number 25,22,398?

- (A) 90                      (B) 900                      (C) 9                      (D) 91

Q35.  $320 \div 5 = ?$

- (A) 54                      (B) 65                      (C) 64                      (D) 74

## Everyday Mathematics

10 questions · 1 mark each · 10 marks

Q36. A rope 5.2 m long is cut into pieces each 40 cm long. How many complete pieces are obtained?

- (A) 18                      (B) 15                      (C) 13                      (D) 11

Q37. In a class of 28 students,  $\frac{3}{4}$  are girls. How many boys are there?

- (A) 12 (B) 2 (C) 21 (D) 7

Q38. A water tank holds 200 litres. If  $\frac{2}{8}$  of the water is used, how much water is left?

- (A) 175 L (B) 50 L (C) 125 L (D) 150 L

Q39. One dozen pens cost ₹ 72. What is the cost of 9 pens?

- (A) ₹ 66 (B) ₹ 60 (C) ₹ 54 (D) ₹ 48

Q40. An auto charges ₹ 20 for the first kilometre and ₹ 8 for every kilometre after that. What is the fare for a journey of 12 km?

- (A) ₹ 116 (B) ₹ 100 (C) ₹ 109 (D) ₹ 108

Q41. A wall is 3 m long and 2 m high. How many square tiles of side 50 cm are needed to cover it completely?

- (A) 36 (B) 12 (C) 24 (D) 48

Q42. A shopkeeper sells 26 kg of rice at ₹ 19 per kg. How much money does he receive?

- (A) ₹ 520 (B) ₹ 494 (C) ₹ 394 (D) ₹ 594

Q43. A train leaves at 9:40 a.m. and reaches its destination at 2:32 p.m. on the same day. How long is the journey?

- (A) 5 h 52 min (B) 4 h 52 min (C) 3 h 52 min (D) 4 h 42 min

Q44. A book has 250 pages. Ritu reads 40 pages every day for 5 days. How many pages are still left?

- (A) 200 (B) 50 (C) 45 (D) 55

Q45. A rope 5.4 m long is cut into pieces each 60 cm long. How many complete pieces are obtained?

- (A) 7 (B) 14 (C) 11 (D) 9

### Achievers Section

5 questions · 3 marks each · 15 marks

Q46. The clock in the figure shows 7:30. What is the angle between the hour hand and the minute hand?



- (A)  $75^\circ$  (B)  $30^\circ$  (C)  $45^\circ$  (D)  $60^\circ$

Q47. You see a bird with a long, sharp, pointed beak catching fish. What does the beak shape tell you?

- (A) It is used for digging soil (B) It is used for sipping nectar  
(C) It is used for cracking seeds (D) It is suited to spearing and gripping fish

Q48. 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) 70                      (B) 75                      (C) 65                      (D) 80

Q49. How many numbers between 50 and 70 leave a remainder of 6 when divided by 9?

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

Q50. Using each of the digits 0, 4, 1, 8 exactly once, what is the smallest 4-digit number that can be formed?

- (A) 8410                      (B) 0148                      (C) 1048                      (D) 1057

## Answer Key

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

## Solutions

Q1. (B) The rule is: multiply the two numbers, then subtract 1. Check: 2, 7 gives 13 and 8, 8 gives 63; so 9, 5 gives 44.

Q2. (A) The second number is the first multiplied by itself:  $3 \times 3 = 9$ , so  $5 \times 5 = 25$ .

Q3. (C) Each number is doubled and 2 is added:  $46 \times 2 + 2 = 94$ .

Q4. (D) The gaps grow by one each time (+2, +3, +4, +5), so after P the next letter is U.

Q5. (D) Lily, Rose, Lotus are all flowers; Ginger is not.

Q6. (A) 13 days later is 1 week(s) and 6 day(s), so the day moves 6 place(s) on from Friday to Thursday.

- Q7. (A)  $15 + 16 - 5 = 26$ . The 5 who play both were counted twice, so they are subtracted once.
- Q8. (B) Position from the right = total - position from the left + 1 =  $24 - 4 + 1 = 21$ th.
- Q9. (C) Every other number is a multiple of 9. 30 is not.
- Q10. (B) The second word relates to the first in the same way Pharmacy relates to Medicine.
- Q11. (C) In alphabetical order the words run maple, matter, melon, minute, so maple comes first.
- Q12. (D) Each letter moves 3 place(s) forward in the alphabet, so after K comes N.
- Q13. (D) The 5 m south cancels part of the 10 m north, leaving  $10 - 5 = 5$  m north, and the 6 m east is unchanged. So Arun is 5 m north and 6 m east.
- Q14. (C) April has 30 days while the others have 31.
- Q15. (B) Counting lines of symmetry: regular pentagon has 5, square has 4, equilateral triangle has 3, regular hexagon has 6. The answer is figure (B).
- Q16. (A) Listing multiples of 8 and of 18, the first number that appears in both lists is 72.
- Q17. (A) The missing corner is  $(16 - 12) = 4$  m wide and  $(9 - 6) = 3$  m tall. Take the full rectangle  $16 \text{ m} \times 9 \text{ m} = 144$  sq m and subtract that corner,  $4 \text{ m} \times 3 \text{ m} = 12$  sq m.  $144 - 12 = 132$  sq m.
- Q18. (D) The digit 1 stands in the 100 place, so its place value is 100.
- Q19. (C) The gaps are 4, 6, 8, 10, so the next gap is 12 and  $30 + 12 = 42$ .
- Q20. (C)  $23 \times 191 = 4,393$ , so the quotient is 191.
- Q21. (D) Side =  $48 / 4 = 12$  cm, so area =  $12 \times 12 = 144$  sq cm.
- Q22. (D)  $356 \times 29 = 356 \times 20 + 356 \times 9 = 7,120 + 3,204 = 10,324$ .
- Q23. (C)  $1 \text{ km} = 1,000 \text{ m}$ , so  $9.6 \text{ km} = 9.6 \times 1,000 = 9,600 \text{ m}$ .
- Q24. (C)  $1,87,326 - 81,489 = 1,05,837$ .
- Q25. (D)  $19 + 5 = 24$ , then  $24 - 2 = 22^\circ\text{C}$ .
- Q26. (D) Make the denominators the same (12):  $1/2 = 6/12$  and  $9/12 = 9/12$ . Adding gives  $15/12 = 1 \frac{1}{4}$ .
- Q27. (C) The hundreds digit is 7, so we round up to 64,000.
- Q28. (C)  $7 \text{ L } 800 \text{ mL} = 7,800 \text{ mL}$ .  $7,800 \times 5 = 39,000 \text{ mL} = 39 \text{ L } 0 \text{ mL}$ .
- Q29. (C) As decimals:  $3/5 = 0.600$ ,  $5/8 = 0.625$ ,  $5/6 = 0.833$ ,  $2/3 = 0.667$ . The greatest is  $5/6$ .
- Q30. (B) The three angles lie on a straight line, so they add to  $180^\circ$ .  $x = 180^\circ - 120^\circ - 20^\circ = 40^\circ$ .
- Q31. (B) Write 61 as 61.00, then  $61.00 - 54.53 = 6.47$ .
- Q32. (A)  $6 \text{ kg } 50 \text{ g} = 6,050 \text{ g}$  and  $1 \text{ kg } 480 \text{ g} = 1,480 \text{ g}$ .  $6,050 - 1,480 = 4,570 \text{ g} = 4 \text{ kg } 570 \text{ g}$ .
- Q33. (B) Listing multiples of 12 and of 15, the first number that appears in both lists is 60.
- Q34. (A) The digit 9 stands in the 10 place, so its place value is 90.
- Q35. (C)  $5 \times 64 = 320$ , so the quotient is 64.
- Q36. (C)  $5.2 \text{ m} = 520 \text{ cm}$  and  $520 / 40 = 13$  pieces.
- Q37. (D)  $3/4$  of 28 = 21 girls, so the number of boys is  $28 - 21 = 7$ .
- Q38. (D)  $2/8$  of 200 = 50 L is used, so  $200 - 50 = 150 \text{ L}$  is left.
- Q39. (C) One pen costs  $72 / 12 = ₹ 6$ , so 9 pens cost  $9 \times 6 = ₹ 54$ .
- Q40. (D) After the first kilometre there are 11 more:  $20 + 11 \times 8 = ₹ 108$ .
- Q41. (C) The wall is  $300 \text{ cm} \times 200 \text{ cm} = 60,000 \text{ sq cm}$ . Each tile is  $50 \times 50 = 2,500 \text{ sq cm}$ .  $60,000 / 2,500 = 24$  tiles.
- Q42. (B)  $26 \times 19 = ₹ 494$ .
- Q43. (B) From 9:40 a.m. to 2:32 p.m. is 4 h 52 min.
- Q44. (B) She reads  $40 \times 5 = 200$  pages, so  $250 - 200 = 50$  pages are left.
- Q45. (D)  $5.4 \text{ m} = 540 \text{ cm}$  and  $540 / 60 = 9$  pieces.
- Q46. (C) The minute hand is at  $180^\circ$  from 12 and the hour hand at  $225^\circ$  from 12, so the angle between them is  $45^\circ$ .

Q47. (D) Beak shape matches diet: a long pointed beak suits catching fish. The answer is It is suited to spearing and gripping fish.

Q48. (A)  $10 + 15 + 15 + 10 + 20 = 70$  books.

Q49. (D) The numbers are 51, 60, 69 — 3 of them.

Q50. (C) 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: 1048.

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