OGO
ORANGE GLOBAL OLYMPIAD

School Level Examination
SLE 2023

GRADE 7

MATHEMATICS

Subject Code: | 2 | 0 | 1 |

Total Questions: 40

Time: 1 hour

## DO NOT OPEN THIS BOOKLET UNTIL INSTRUCTED TO DO SO

- ➤ All questions are compulsory.

- ➤ Read the instructions on the **ANSWER SHEET** and fill in your **NAME**, **CLASS** and **OTHER INFORMATION**.

- ➤ To mark your choice of answer by darkening the circles in the **ANSWER SHEET**, use a **BLUE/BLACK BALLPEN** only.

- ➤ You **MUST** record your answers on the **ANSWER SHEET** only.

- ➤ There are **40 MULTIPLE CHOICE QUESTIONS**. Use the information provided to choose the **BEST** possible answer among the four options. On your **ANSWER SHEET** fill in the circle that matches your answer.

- ➤ Marks are **NOT** deducted for incorrect answers.

- ➤ Return the **ANSWER SHEET** to the invigilator at the end of the examination.

- ➤ You are **NOT** allowed to use a calculator. You may use a ruler and spare paper for rough work.

MATHEMATICS

This question paper contains a total of 40 questions divided into three sections - A, B and C.
Read the instructions carefully before attempting these questions.

Section A (Logical Reasoning)

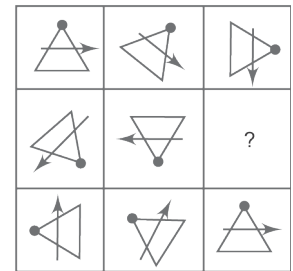1. Which of the following statements is correct regarding to the given diagram?

    (A) B and D are common to the circle and triangle.

    (B) B is in common to all the three figures.

    (C) D and G are in common to the rectangle and triangle.

    (D) C and D are in the triangle.
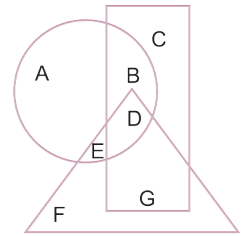
2. Find the missing figure in the given image.

    (A)   (B)

    (C)   (D)

3. P, Q, R, S and T are sitting on a bench. P is sitting next to Q, S is sitting next to R, S is not sitting with T, who is on the left end of the bench. R is on the second position from the right. P is on the right of Q and T. On which position is P sitting?

    (A) Between T and S   (B) Between Q and R

    (C) Between Q and S   (D) Between S and R

4. If the code for 'CHAP' is 'XSZK', then for what is 'WVZU' the code?

    (A) LEAP   (B) MOST

    (C) DEAF   (D) COST

5.

    (A)   (B)

    (C)   (D)
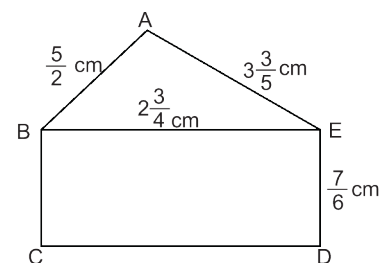
6. One morning after sunrise, Ram was standing facing a pole. The shadow of the pole fell exactly to his right. To which direction was he facing?

    (A) North   (B) West

    (C) East   (D) South

7. If A is the mother of B, B is the sister of D, D is the father of M, then how is A related to M?

   (A) Mother   (B) Grand Mother

   (C) Aunt   (D) Need more information

8. Find the odd one out.

   (A) Air and oxygen   (B) Flower and petal

   (C) Cloth and thread   (D) Shirt and tie

Section B (Subject Specific)

9. Which of the following statements is correct?

   (A) All natural numbers are whole numbers; all whole numbers are integers.

   (B) All whole numbers are integers; all integers are natural numbers.

   (C) All integers are whole numbers; all natural numbers are integers.

   (D)   All integers are whole numbers; all integers are natural numbers.

10. What will be the predecessor of –1?

   (A) 0   (B) 2

   (C) –2   (D) 1

11. If 213 × 160 = 34080, then 1.60 × 2.13 equals _____.

   (A) 0.3408   (B) 34.08

   (C) 3.408   (D) 340.8

12. What kind of fraction is 23/19?

   (A) Proper fraction   (B) Improper fraction

   (C) Unit fraction   (D) Equivalent fraction

13. The mean of three numbers is 45. All the three numbers are different natural numbers. If the lowest is 37. Which among the following could be the highest possible number of the remaining two numbers?

   (A) 53   (B) 60

   (C) 97   (D) 98

14. The perimeter of the given figure is _____.

   (A) $10\dfrac{11}{30}$ cm   (B) $11\dfrac{11}{60}$ cm

   (C) $13\dfrac{14}{15}$ cm   (D) $10\dfrac{11}{60}$ cm

15. Shifting one term from one side of an equation to another side with a change of sign is known as _____.

   (A) Commutativity   (B) Transposition

   (C) Distributivity   (D) Associativity

16. The mode of the unimodular data 7, 8, 9, 8, 9, 10, 9, 10, 11, 10, 11, 12 and x is 10. The value of x is _____.

    (A) 10   (B) 9

    (C) 8   (D) 11

17. If ∆ABC and ∆PQR are to be congruent, name one additional pair of corresponding parts.

    (A) BC = QR   (B) BC = PQ

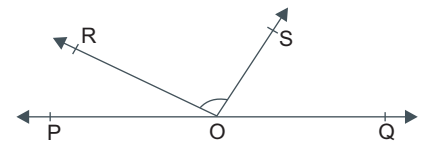   (C) BC = RP   (D) All of these
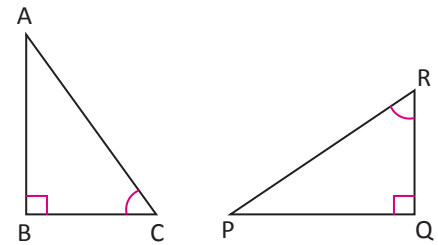
18. Evaluate the value of x that makes the following expression true:

    x − {−4 − (2 − 8 ÷ 4)} = 8
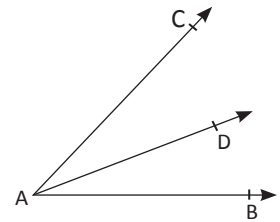
    (A) − 12   (B) − 4

    (C) 4   (D) 12

19. In the given figure, ∠ROS is a right angle, and ∠POR and ∠QOS are in the ratio 1:5. Then, ∠QOS measures _____.

    (A) 75°   (B) 150°

    (C) 45°   (D) 60°

20. AD bisects ∠CAB, where ∠CAD = (8x + 9)° and ∠DAB = (x + 30)°. Find the value of x.

    (A) 2°   (B) 3°

    (C) 4°   (D) 5°

21. An exterior angle of a triangle measures 110° and its interior opposite angles are in the ratio 2 : 3. Find the angles of the triangle.

   (A) 44°, 66°, 70°   (B) 40°, 70°, 70°

    (C) 42°, 68°, 70°   (D) 55°, 55°, 70°

22. A median is the line segment which joins the midpoint of a side to the opposite vertex. If the bisector of an angle of a triangle is also the median of the triangle. Which of the following triangles can have such medians which also act as angle bisectors?

    (A) Equilateral triangle   (B) Isosceles

    (C) Right angled isosceles triangle   (D) All of these

23. The number of unit cubes in the given structure is _____.

    (A) 27   (B) 21

    (C) 26   (D) 17
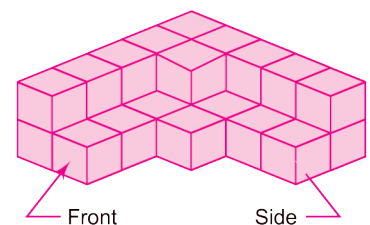
24. In ∆PQR, PS ⊥ QR, ∠Q = ∠R and PQ = PR. Which of the following properties of congruence can be used to prove ∆PSQ ≅ ∆PSR?

    (A) SAS property   (B) SSS property

    (C) RHS property   (D) ASA property

25. Find the perimeter of given triangle if $x > 0$.

    (A) $6x^2 + 9$

    (B) $4x^2 + 4$

    (C) $6x^2 + 10x + 13$

    (D) None of these

A triangle with vertices A (top), B (bottom left), C (bottom right). Side AB labeled $-x^2 + 5x + 7$, side AC labeled $4x^2 - 2x - 7$, side BC labeled $x^2 - 3x + 4$.
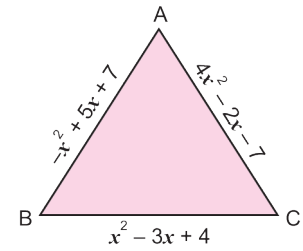
26. A farmer bought a buffalo for ₹44,000 and a cow for ₹18,000. He sold the buffalo at a loss of 5% but made a profit of 10% on the cow. The net result of the transaction is _____.

    (A) Loss of ₹200   (B) Profit of ₹400

    (C) Loss of ₹400   (D) Profit of ₹200

27. What is the multiplicative inverse of $\dfrac{5}{4} - \dfrac{7}{6} - \left(-\dfrac{2}{3}\right)$?

    (A) $\dfrac{3}{4}$ (B) $-\dfrac{3}{4}$

    (C) $\dfrac{4}{3}$ (D) $-\dfrac{4}{3}$

28. If $\dfrac{p}{q} = \left(\dfrac{-3}{4}\right)^{16} \div \left[\left(\dfrac{-3}{4}\right)^4\right]^4$, then the value of $\left(\dfrac{p}{q}\right)^2 + \left(\dfrac{p}{q}\right)^4$ is _____.

    (A) 0   (B) 1

    (C) 2   (D) -1

Instruction: Q. 29 to 33 are two-key based questions having four options A, B, C and D out of which TWO are correct.

29. Have a close look at the given decimal number sequences and choose the correct ones.

    (A) 0.658 < 0.732 < 0.512 < 0.813   (B) 0.512 < 0.658 < 0.732 < 0.813

    (C) 0.813 > 0.732 > 0.658 > 0.512   (D) 0.514 < 0.732 < 0.658 < 0.813

30. Ranjan bought 120 oranges at ₹4 each. He sold 60% of the oranges at ₹5 each and the remaining at ₹3.50 each. His _____ is _____ %.

    (A) Loss   (B) Profit

    (C) 10   (D) 7.5

31. Which of the following CANNOT be written as a rational number with denominator 5?

    (A) $\dfrac{7}{10}$ (B) $\dfrac{35}{25}$

    (C) $\dfrac{35}{250}$ (D) $\dfrac{1}{-4}$

32. Which of the following sets of lengths could be the lengths of the sides of a right-angled triangle?

    (A) 1.5 m, 3.6 m, 3.9 m   (B) 6 cm, 12 cm, 13 cm

    (C) 7 m, 24 m, 25 m   (D) 9 m, 8 m, 10 m

33. If a wire in the shape of a square is rebent into a rectangle, then the _____ of both shapes remain same, but _____ may vary.

(A) sizes   (B) perimeters

(C) areas   (D) shapes

Section C (Competency Enhancement)

34. If two parallel lines are bisected by a perpendicular drawn to both the lines, then interpret the given statements in terms of the following options?

    Statement 1: Alternate interior angles are equal.

    Statement 2: Sum of vertically opposite angles, thus formed, is 180°.

    (A) Statement 1 is true and 2 is false   (B) Statement 2 is true and 1 is false

    (C) Both Statements are true   (D) Both Statements are false

35. A crow is sitting on a branch of a tree that is situated on the bank of a river. The branch is $29\frac{2}{5}$ m above the water level of the river. If crow sees, the image of itself in the river, then the distance between crow and its image is (Assume that the surface of water acts like a plane mirror) _____.

    (A) 58.8 m   (B) 29.5 m

    (C) 63.8 m   (D) None of these

The plan and measurements for a house are given. The house is surrounded by a path 1m wide and height of rooms is 3 m. Answer the questions 36 and 37.

Main gate/Door
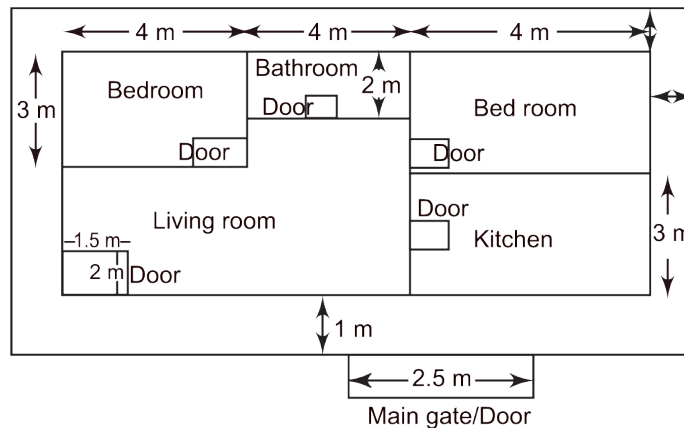
36. What is the cost of painting the walls of both the bedrooms at the rate of ₹38 per m², if each room has a door measuring 1.5 by 2 m?

    (A) ₹4,788   (B) ₹912

    (C) ₹3,192   (D) ₹2,964

37. What is the cost of fencing the house including path at the rate of ₹12 per metre?

    (A) ₹438   (B) ₹492

    (C) ₹498   (D) ₹366

38. Match the following:

Column I		Column II	
(a)	$11 + 3x^2 - 2y^2$	(i)	Like terms
(b)	$3x - 9$	(ii)	Unlike terms
(c)	22 xyz, $-$ 16 xyz, 13 xyz	(iii)	Trinomial
(d)	$3xyz^2, -3xy^2z$	(iv)	Polynomial with degree 1

(A) a–iii, b–iv, c–ii, d–i

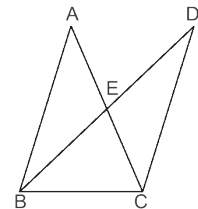(B) a–iii, b–iv, c–i, d–ii

(C) a–i, b–iv, c–iii, d–ii

(D) None of these

39. In the given figure, AB = DC and AC = DB. Which third matching part would you use to prove $\triangle ABC \cong \triangle DCB$?

(A) $\angle B = \angle C$

(B) $\angle A = \angle C$

(C) BC = CB

(D) $\angle AEC = \angle DEC$

40. In the figure (not drawn to scale), ABCD is a rhombus and CGEF is a square. The value of y is _____.

(A) 30°

(B) 50°

(C) 45°

(D) 60°