

Mathematics — Ganita Manjari
Sample Question Paper 4
Class IX | 2026-27

Time Allowed: 3 Hours

Maximum Marks: 80

General Instructions

1. This question paper contains 38 questions. All questions are compulsory.
2. The question paper is divided into five sections A, B, C, D and E.
3. Section A has 18 MCQs and 2 assertion–reason questions of 1 mark each.
4. Section B has Questions 21 to 25 of 2 marks each.
5. Section C has Questions 26 to 31 of 3 marks each.
6. Section D has Questions 32 to 35 of 5 marks each.
7. Section E has Questions 36 to 38, case studies of 4 marks each, with subparts of 1, 1 and 2 marks.
8. There is no overall choice. Internal choice is provided in two questions each in Sections B, C and D, and in the 2-mark subpart of each case study in Section E.
9. Draw neat figures wherever required. Use $\pi = 22/7$ unless another value is stated.
10. Use of calculators is not allowed.

SECTION A

(20 questions $\times$ 1 mark = 20 marks)

1. How many lines exist that have a given slope?

- | | |
|---------------------|-----------------|
| (A) None | (B) Exactly two |
| (C) Infinitely many | (D) Exactly one |

2. After Over 19, a team's run rate was 6. What is the run rate after 20 overs given the team made 12 runs in the last over?

- | | |
|---------|---------|
| (A) 6.0 | (B) 6.3 |
| (C) 6.6 | (D) 9.0 |

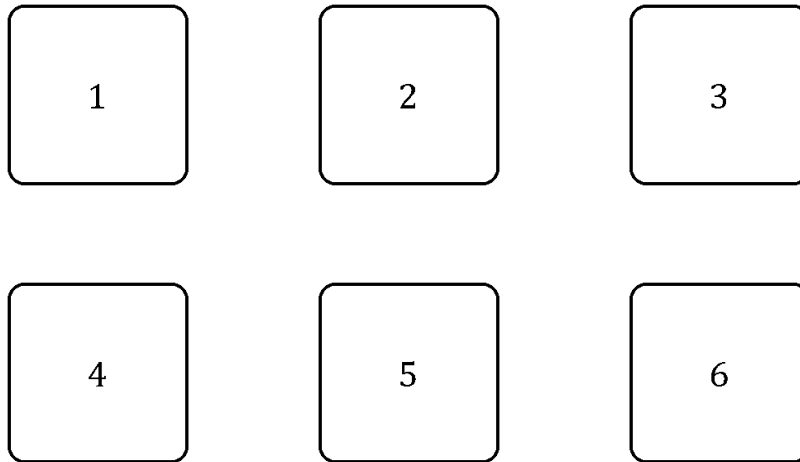
3. Find the value of the quadratic polynomial $7s^2 - 4s + 6$ if $s = 4$.

- | | |
|---------|---------|
| (A) 104 | (B) 101 |
| (C) 103 | (D) 102 |

4. If a quadrilateral is a square, then all its angles are equal. Is the converse true?

- (A) No; a square is a counterexample
- (B) Yes; equal angles imply equal sides
- (C) Yes; all rectangles are squares
- (D) No; a non-square rectangle is a counterexample

5. When a single 6-sided die is rolled, what is the total number of possible outcomes in the sample space?



(A) 12

(B) 2

(C) 3

(D) 6

6. An isosceles triangle has base 10 cm, and its area is 60 cm^2 . What are the lengths of the equal sides?

(A) 10 cm each

(B) 15 cm each

(C) 12 cm each

(D) 13 cm each

7. Compute $\text{gcd}(51000, 81000)$ using the improved version of Euclid's algorithm.

(A) 3000

(B) 2999

(C) 3002

(D) 3001

8. The distance of a chord of length 16 cm from the centre of a circle is 6 cm. Find the radius of the circle.

(A) 20 cm

(B) 12 cm

(C) 8 cm

(D) 10 cm

9. If $x - y = 7$ and $xy = 5$, find $x^2 + y^2$.

(A) 49

(B) 57

(C) 59

(D) 61

10. Find the degree of the following polynomial: $4z - 3$.

(A) 1

(B) 3

(C) 2

(D) 0

11. Find the value of 85^2 using a suitable identity.

(A) 7225

(B) 7227

(C) 7226

(D) 7224

12. How many small cubes with side 20 cm can be packed tight in a cubical box with side 2 m?

- (A) 1002 (B) 1000
(C) 999 (D) 1001

13. How many multiples of 4 lie between 10 and 250?

- (A) 61 (B) 62
(C) 59 (D) 60

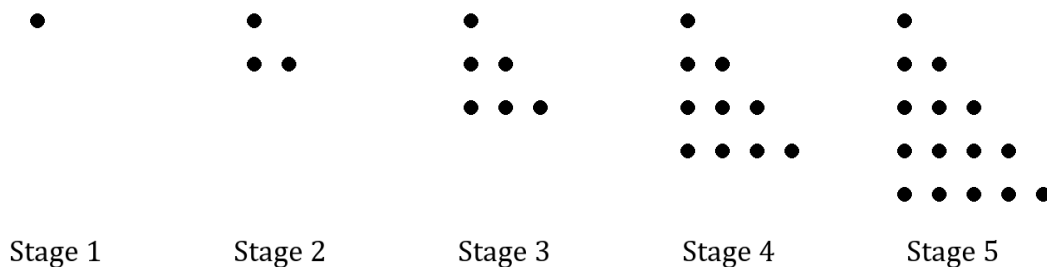
14. Justify why the plane cannot be tiled with a regular pentagon.

- (A) Its sides cannot be equal (B) 108° does not divide 360°
(C) It has no diagonals (D) Its angles total 360°

15. Factor completely: $16y^2 - 24y + 9$.

- (A) $(4y - 9)^2$ (B) $(4y - 3)^2$
(C) $(4y + 3)^2$ (D) $(8y - 3)^2$

16. A child arranges marbles in rows so that the first row has 1 marble, the second has 2 marbles, the third has 3, and so on up to 25 rows. How many marbles does the child use in all?



- (A) 325 (B) 324
(C) 326 (D) 327

17. The set of all possible outcomes of a random experiment is called the _____.

- (A) frequency (B) event
(C) sample space (D) relative frequency

18. Suppose you have a cup in the shape of a right circular cone. Fill it with water to half the depth of the cone. What fraction of the volume of the cup is occupied by the water?

- (A) $\frac{1}{4}$ (B) $\frac{1}{8}$
(C) $\frac{1}{2}$ (D) $\frac{3}{4}$

For Questions 19 and 20, choose the correct option:

- (A) Both A and R are true, and R is the correct explanation of A.
- (B) Both A and R are true, but R is not the correct explanation of A.
- (C) A is true, but R is false.
- (D) A is false, but R is true.

19. Assertion (A): The point (6, 20) lies on the line $y = 3x + 1$.

Reason (R): A point lies on a line when its coordinates satisfy the equation of the line.

20. Assertion (A): The positive integer 36 has an odd number of positive divisors.

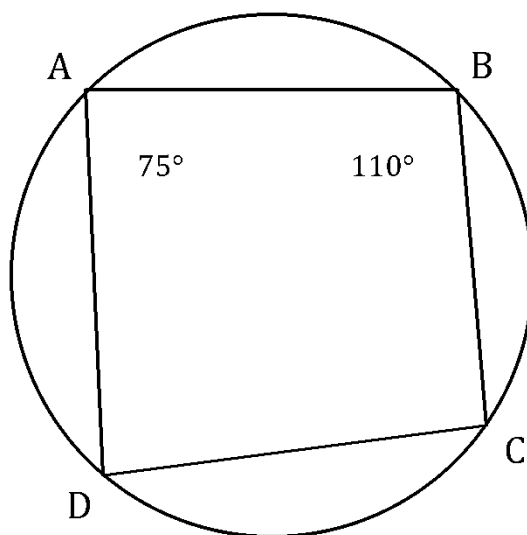
Reason (R): In a perfect square, divisors pair to give the number, with its positive square root paired with itself.

SECTION B

(5 questions $\times$ 2 marks = 10 marks)

21. Execute the algorithm to compute the divisors of 775.

22. (A) ABCD is a cyclic quadrilateral inscribed in a circle. If $\angle A$ measures 75° , what is the measure of $\angle C$? If $\angle B$ measures 110° , what is the measure of $\angle D$?



OR

(B) State whether M is the midpoint of segment ST. Justify your answer.

S (0, 0), M (0, 5), T (0, -10).

23. Convert $\frac{2}{9}$ into a terminating decimal or a non-terminating repeating decimal by the process of long division.

24. (A) Find the 10th and nth terms of the GP: 5, 25, 125, ...

OR

(B) Convert $\frac{7}{20}$ into a terminating decimal or a non-terminating repeating decimal by the process of long division.

25. Suppose you roll a 6-sided die 12 times and get a '3' three times. (i) What is the experimental probability of rolling a '3'? (ii) What is the theoretical probability of rolling a '3'?

SECTION C

(6 questions $\times$ 3 marks = 18 marks)

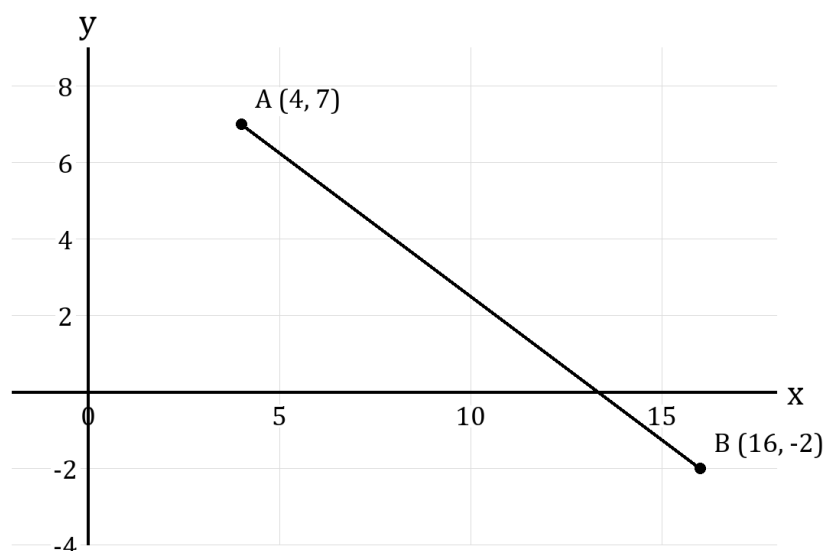
26. (A) A gym charges a fixed monthly fee and an additional cost per hour for using the badminton court. A student using the gym observed that when she used the badminton court for 10 hours, her bill was ₹800. When she used it for 15 hours, her bill was ₹1100. If the monthly bill y depends on the hours of the use of the badminton court, x , according to the relation $y = ax + b$, find the values of a and b .

OR

(B) Assume that $m \geq n > 0$. Verify that d divides m and n if and only if d divides both n and $m \bmod n$.

27. A stationery shop owner made ₹8000 selling books, of which 30% is the profit amount, and ₹1000 selling book covers, of which 50% is the profit amount. What is the percentage of profit on the total sales?

28. (A) Let P , Q be points of trisection of AB , with P closer to A , and Q closer to B . Using your knowledge of how to find the coordinates of the midpoint of a segment, how would you find the coordinates of P and Q ? Do this for the case when the points are $A(4, 7)$ and $B(16, -2)$.



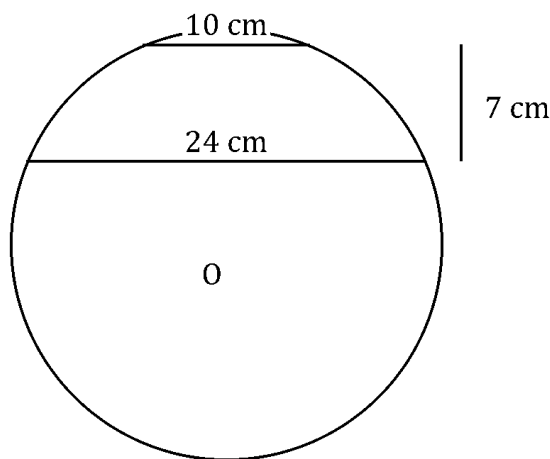
OR

(B) A car has two wipers which do not overlap. Each wiper has a blade of length 28 cm and sweeps through an angle of 120° . Find the total area cleaned at each sweep of the blades.

29. A rectangular pool is such that its breadth is 4 metres less than its length and its area is 96 sq. metres. Find the length and breadth of the pool.

30. Three rational numbers x, y, z satisfy $x + y + z = 0$ and $xy + yz + zx = 0$. Show that all the rational numbers x, y, z must be simultaneously zero.

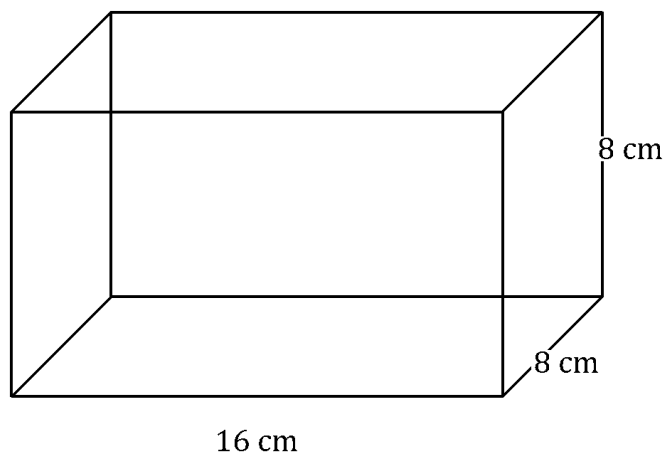
31. Two parallel chords of lengths 10 cm and 24 cm are on the same side of the centre of a circle. The distance between the chords is 7 cm. Find the radius of the circle.



SECTION D

(4 questions $\times$ 5 marks = 20 marks)

32. Metal spheres, each of radius 2 cm, are packed into a rectangular box of internal dimensions 16 cm $\times$ 8 cm $\times$ 8 cm. When 16 spheres are packed, the box is filled with preservative liquid. Find the volume of this liquid. Round your answer to the nearest integer.



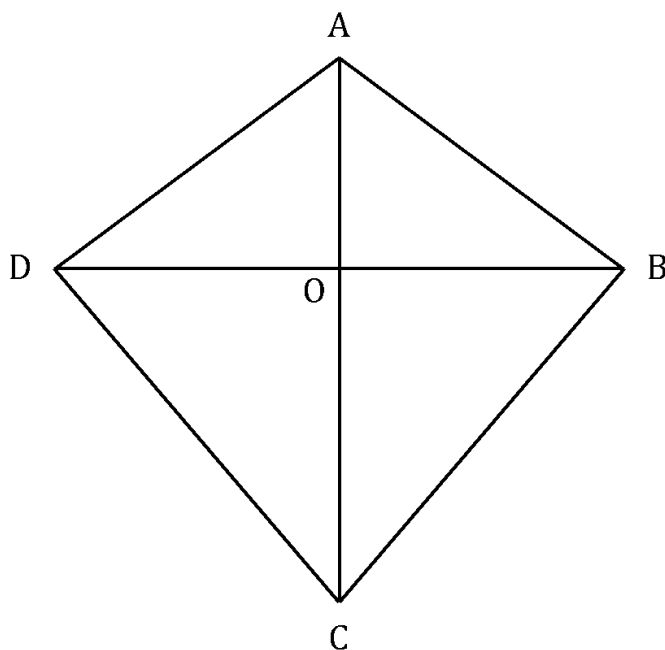
33. (A) A lending library has a fixed charge for the first three days and an additional charge for each day thereafter. Saritha paid ₹27 for a book kept for seven days, while Susy paid ₹21 for the book she kept for five days. Find the fixed charge and the charge for each extra day.

OR

(B) Prove that the midpoints of the sides of a quadrilateral form a parallelogram.

34. The diagonals AC and BD of a parallelogram ABCD intersect at O. A line through O meets AB and CD at points P and Q respectively. Show that O is the midpoint of PQ.

35. (A) Show that the area of a kite is half the product of its diagonals. Show this
(i) using algebra, and
(ii) using geometry.



OR

(B) A physical fitness evaluation is being undertaken. The final marks are calculated by combining the marks for strength, flexibility, and agility in the ratio 4 : 5 : 6. Rashi has scored 60, 65, and 70. Keerthi has scored 55, 65, and 75 respectively.

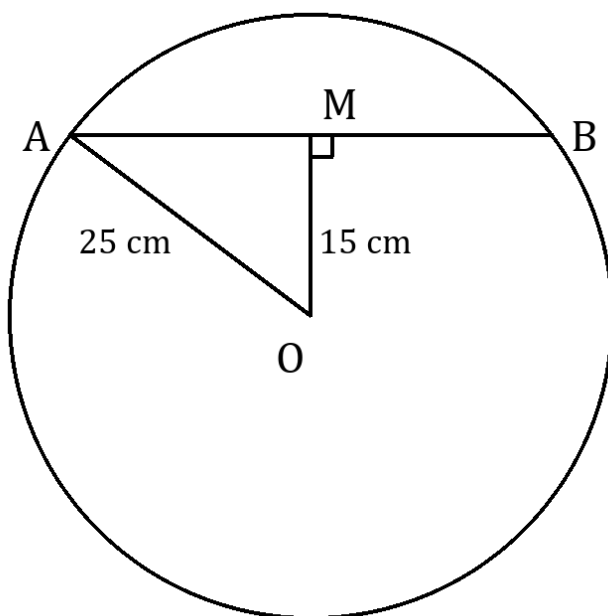
(i) Find out whose total is more without calculating.

(ii) What are their final marks?

SECTION E

(3 questions $\times$ 4 marks = 12 marks)

36. A circular window has centre O and radius 25 cm. A straight decorative strip AB is a chord. The perpendicular OM from O to AB measures 15 cm, as shown in figure.



- (i) State the relation between AM and MB.
- (ii) Find $\angle OMB$.
- (iii) (A) Find AM and the full length AB.

OR

- (iii) (B) Find the area and perimeter of triangle OAB.

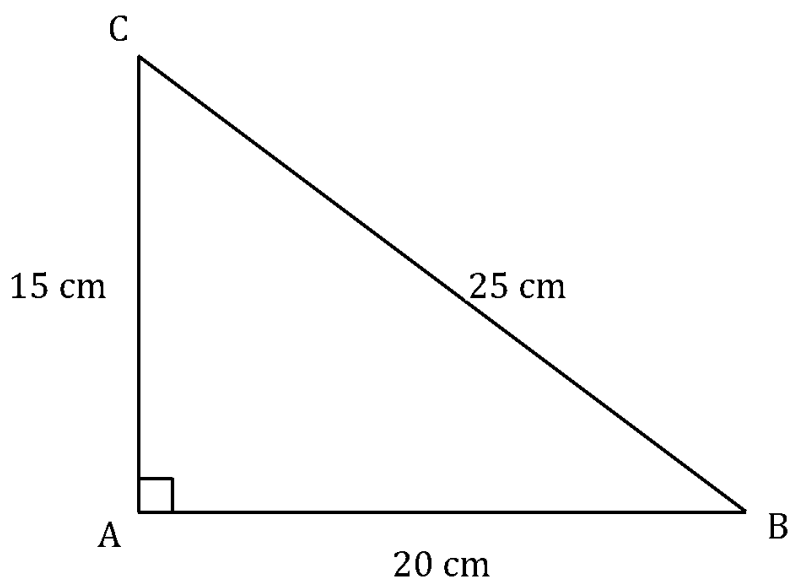
37. For a probability activity, Tiwari Academy puts 6 red counters and 9 blue counters of the same size in a bag. A student draws a counter at random, replaces it, and mixes the bag before drawing again.

- (i) How many counters are in the bag?
- (ii) Find the probability of red on the first draw.
- (iii) (A) Find the probability that both counters drawn are red.

OR

- (iii) (B) Find the probability of drawing one red and one blue counter in either order.

38. A triangular panel has sides 15 cm, 20 cm and 25 cm, as shown in figure. Students compare two ways of calculating its area.



- (i) Find the perimeter.
- (ii) Find the semiperimeter.
- (iii) (A) Explain why the triangle is right-angled and hence find its area.

OR

- (iii) (B) Use Heron's formula to find its area.