

Mathematics — Ganita Manjari

Sample Question Paper 11

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. The diameter of a circle is 26 cm. A chord of length 24 cm is drawn in the circle. Find the distance from the centre of the circle to the chord.

- | | |
|-----------|-----------|
| (A) 10 cm | (B) 13 cm |
| (C) 5 cm | (D) 12 cm |

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

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

3. The surface areas of the three faces of a cuboid that meet at one of the corners of the cuboid are 6 cm^2 , 15 cm^2 , and 10 cm^2 respectively. What is the volume of the cuboid?

- | | |
|--------|--------|
| (A) 32 | (B) 29 |
| (C) 31 | (D) 30 |

4. Find the value of $(199)^3$ using a suitable identity.

- | | |
|-------------|-------------|
| (A) 7880598 | (B) 7880601 |
| (C) 7880599 | (D) 7880600 |

5. What is the constant term of the polynomial $9x^3 + 5x^2 - 8x - 10$?

- | | |
|-----------|----------|
| (A) -10 | (B) -8 |
| (C) 9 | (D) 5 |

6. The number 0.99999... is exactly equal to _____.

- (A) 0.999 (B) 0.99
(C) 0.9 (D) 1

7. Find the value of the linear polynomial $5x - 3$ if $x = 0$.

- (A) -4 (B) -2
(C) -3 (D) -1

8. List all angles of quadrilateral ABCD adjacent to $\angle A$. List all angles opposite to $\angle A$.

- (A) Adjacent: $\angle B, \angle D$; opposite: $\angle C$
(B) Adjacent: $\angle A, \angle C$; opposite: $\angle B$
(C) Adjacent: $\angle C, \angle D$; opposite: $\angle B$
(D) Adjacent: $\angle B, \angle C$; opposite: $\angle D$

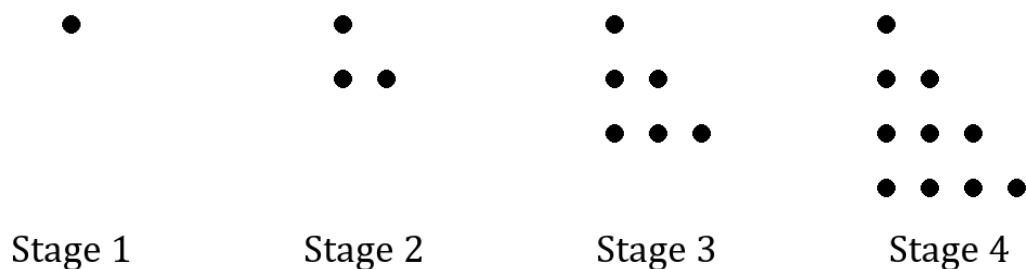
9. If $x - y = 14$ and $xy = 12$, find $x^2 + y^2$.

- (A) 220 (B) 222
(C) 218 (D) 196

10. Find the value of 214^2 using a suitable identity.

- (A) 45798 (B) 45797
(C) 45795 (D) 45796

11. Find the 80th triangular number.

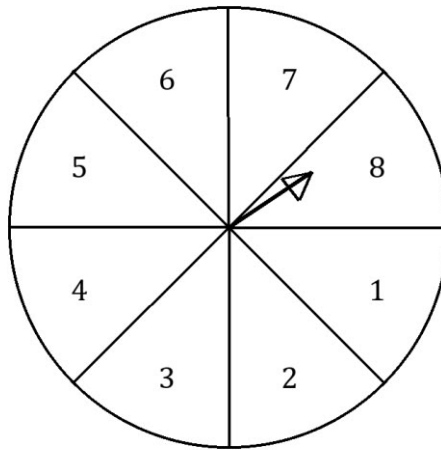


- (A) 3240 (B) 3241
(C) 3239 (D) 3242

12. 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) $\frac{1}{2}$ (B) $\frac{1}{4}$
(C) $\frac{1}{8}$ (D) $\frac{3}{4}$

13. A game of chance consists of spinning an arrow, which comes to rest pointing at one of the numbers 1, 2, 3, 4, 5, 6, 7, 8, and these are equally likely outcomes. What is the probability that it will point at 8?



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

14. What are the coefficients of x^2 and x^3 in the polynomial $x^4 - 3x^3 + 6x^2 - 2x + 7$?

- (A) 6 and 3 (B) 6 and -3
(C) -2 and 7 (D) -3 and 6

15. Tossing a fair coin has a probability of _____ for getting heads.

- (A) 1 (B) $\frac{1}{2}$
(C) 0 (D) 2

16. Compute $\text{gcd}(60, 16)$ using the improved version of Euclid's algorithm.

- (A) 5 (B) 6
(C) 4 (D) 3

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

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

18. Find the value using a suitable identity: 24×16 .

- (A) 383 (B) 385
(C) 384 (D) 386

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 (13, 29) lies on the line $y = 2x + 3$.

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

20. Assertion (A): The positive integer 169 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. (A) State whether M is the midpoint of segment ST. Justify your answer.

S (-8, 7), M (0, -2), T (6, -3).

OR

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

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

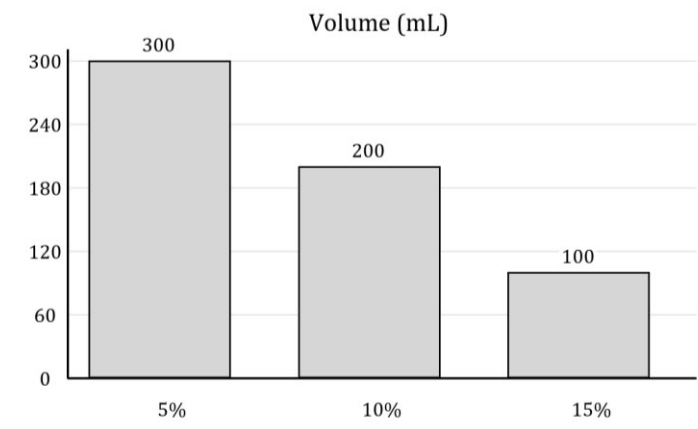
22. (A) Let a and b be two non-zero rational numbers such that $a + \frac{1}{b} = 0$. Without assigning any numerical values, determine whether ab is positive or negative. Justify your answer.

OR

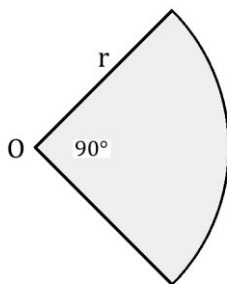
(B) A goldsmith melts together three pieces of gold: 9 units at 12 varṇa, 5 units at 10 varṇa, and 17 units at 11 varṇa. Find the purity in varṇa of the combined gold.

23. Execute the algorithm to compute the divisors of 135.

24. Calculate the concentration of spice mix when a 300 mL kashayam/kadha with 5% spice mix, a 200 mL one with 10% spice mix and a 100 mL one with 15% spice mix are combined.



25. Find the area of a quadrant of a circle whose circumference is 66 cm.



SECTION C

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

26. The sum of the 4th and 8th terms of an AP is 24 and the sum of the 6th and 10th terms is 44. Find the first three terms of the AP.

27. (A) You have a box containing 3 red pens, 4 black pens and 2 green pens. You pick a pen (without looking) from the box and put it back. Then your friend does the same. (i) What are the possible outcomes of the pen colours? Draw a tree diagram representing the possible outcomes. (ii) Find the probability that both you and your friend pick pens of the same colour.

OR

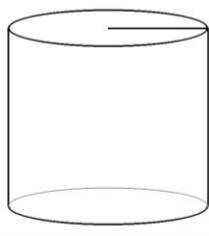
(B) The sides of a triangle have lengths 7 cm, 24 cm, 25 cm. Find the area of the triangle in two different ways.

28. What length of tarpaulin 3 m wide is required to make a conical tent of height 8 m and base radius 6 m? Assume that the extra length of material required for stitching margins and wastage in cutting is 20 cm.

29. In a circle with centre O, chords AB and AC are congruent. Explain why this statement is true: "The centre of the circle lies on the angle bisector of $\angle BAC$ ".

30. Find the value of $x^3 + y^3 - 12xy + 64$, when $x + y = -4$.

31. (A) A solid metallic cube of side 12 cm is melted and recast into solid cylindrical rods, each having radius 2 cm and height 12 cm. Find (i) the volume of the cube, (ii) the volume of one cylindrical rod, (iii) the approximate number of complete cylindrical rods that can be formed. (Use $\pi = \frac{22}{7}$.)



OR

(B) The sides of a triangle are in the ratio 2 : 3 : 4, and its perimeter is 45 cm. Find its area.

SECTION D

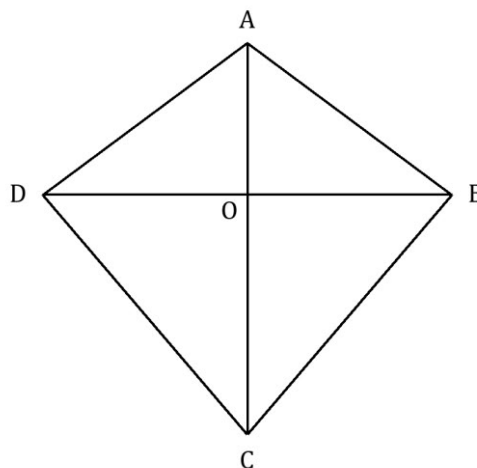
(4 questions $\times$ 5 marks = 20 marks)

32. (A) Let $p(x) = ax + b$ and $q(x) = cx + d$ be two linear polynomials such that (i) the graph of $p(x)$ passes through the points (2, 3) and (6, 11), (ii) the graph of $q(x)$ passes through the point (4, -1), (iii) the graph of $q(x)$ is parallel to the graph of $p(x)$. Find $p(x)$ and $q(x)$. Also find the coordinates of the points where these lines meet the x-axis.

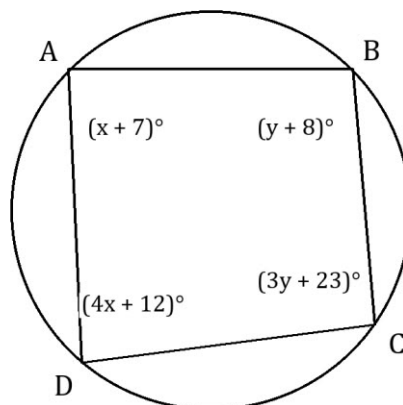
OR

(B) Explain why the following statement is true: If the perpendicular distance of a chord from the centre is d and the radius is r , then the chord length is $2\sqrt{r^2 - d^2}$.

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



34. (A) In a cyclic quadrilateral ABCD, $\angle A = (x + 7)^\circ$, $\angle B = (y + 8)^\circ$, $\angle C = (3y + 23)^\circ$ and $\angle D = (4x + 12)^\circ$. Find all four angles of the cyclic quadrilateral.



OR

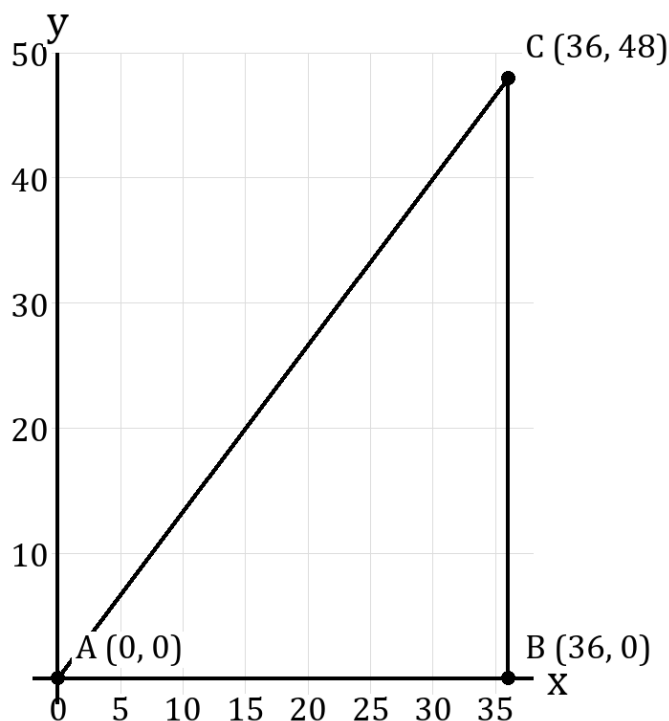
(B) The taxi charges in a city consist of a fixed charge together with the charge for the distance covered for every km. For a distance of 10 km, the total amount paid is ₹155 and for a journey of 15 km, the total amount paid is ₹220. What is the fixed charge and the charge per km? How much does a person have to pay for travelling a distance of 25 km?

35. A ball is dropped from a height of 80 metres. After hitting the ground, it bounces back to 60% of the height from which it fell. It continues bouncing in this way. (i) What height does it reach after the 5th bounce? (ii) What is the total vertical distance travelled by the time it hits the ground for the 6th time?

SECTION E

(3 questions × 4 marks = 12 marks)

36. A school survey marks three points on a square coordinate grid: A (0, 0), B (36, 0) and C (36, 48). One grid unit represents one metre. The path A–B–C follows two perpendicular sides of the school garden.

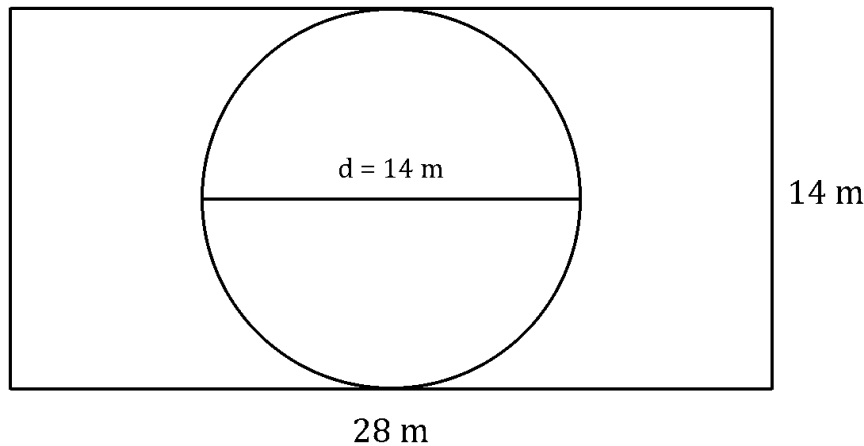


- (i) Find the length AB.
- (ii) Find the length BC.
- (iii) (A) Calculate the direct distance AC and the perimeter of triangle ABC.

OR

- (iii) (B) Find the coordinates of the midpoint M of AC and its distance from A.

37. A rectangular lawn measures 28 m by 14 m. A circular flowerbed of diameter 14 m is placed wholly inside it, as shown in figure. Express answers involving the circle in terms of π .



- (i) Find the area of the rectangular lawn.
- (ii) Find the radius of the flowerbed.
- (iii) (A) Find the flowerbed area and the lawn area outside it.

OR

- (iii) (B) Find the outer perimeter of the lawn and the circumference of the flowerbed.

38. Tiwari Academy has 72 pencils and 96 erasers for identical prize packets. Every packet must contain the same number of pencils and the same number of erasers, with no items left over.

- (i) State the divisibility condition on the number of packets.
- (ii) Which mathematical quantity gives the greatest possible number of packets?
- (iii) (A) Use Euclid's algorithm to find that greatest number.

OR

- (iii) (B) If 24 packets are made, find the contents of each packet and verify the totals.