

Mathematics — Ganita Manjari

Sample Question Paper 2

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. If $x - y = 5$ and $xy = 3$, find $x^2 + y^2$.

- (A) 25 (B) 33
(C) 29 (D) 31

2. Find the value of 78^2 using a suitable identity.

- (A) 6086 (B) 6084
(C) 6083 (D) 6085

3. If a number is a multiple of 6, then it is a multiple of 3. Is the converse true?

- (A) Yes; 3 divides 6
(B) No; 3 is a counterexample
(C) No; 6 is a counterexample
(D) Yes; every multiple of 3 is a multiple of 6

4. How many lines exist that have a given slope and pass through a given point?

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

5. Is 1, 3, 9, 27, 81, ... a geometric progression? If so, what is the common ratio?

(A) Yes; 1

(B) No

(C) Yes; 3

(D) Yes; 4

6. 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: $\angle D$

7. What is the x-coordinate of a point on the y-axis?

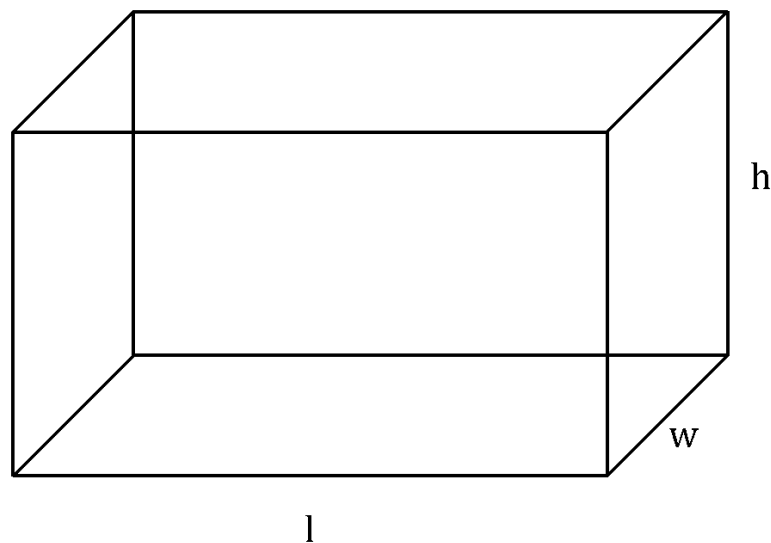
(A) 1

(B) Any non-zero number

(C) -1

(D) 0

8. 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) 29

(B) 31

(C) 30

(D) 32

9. A rational number in its lowest form has denominator $2^3 \times 5$. How many decimal places will its decimal expansion have? Explain your answer.

(A) 3

(B) 2

(C) 1

(D) 4

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

(A) Yes; all rectangles are squares

(B) No; a square is a counterexample

(C) Yes; equal angles imply equal sides

(D) No; a non-square rectangle is a counterexample

11. 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) 6.3 (B) 9.0
(C) 6.6 (D) 6.0

12. Find the value of 35^2 using a suitable identity.

- (A) 1224 (B) 1225
(C) 1226 (D) 1227

13. Given some data with corresponding weights, how would the weighted average change if all the weights are doubled?

- (A) It remains unchanged (B) It increases by 2
(C) It halves (D) It doubles

14. The area of a right-angled triangle is 54 sq. cm. One of its legs has length 12 cm. Find its perimeter.

- (A) 48 cm (B) 36 cm
(C) 30 cm (D) 42 cm

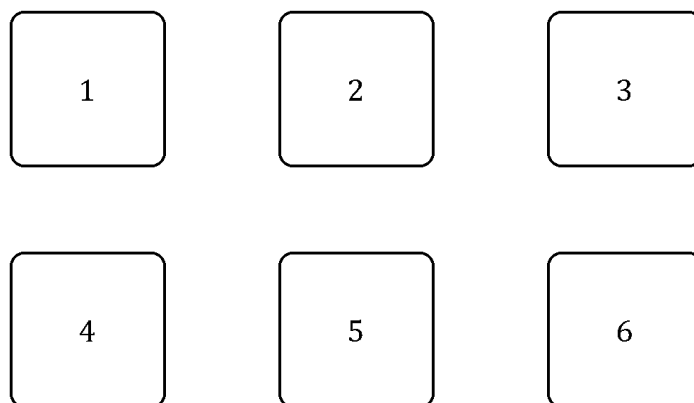
15. Is 1, 2, 4, 8, 16, ... a geometric progression? If so, what is the common ratio?

- (A) Yes; 2 (B) Yes; 4
(C) Yes; 1 (D) No

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

- (A) 12 cm each (B) 15 cm each
(C) 13 cm each (D) 10 cm each

17. What is the probability of getting an even number when rolling a fair 6-sided die?



- (A) $\frac{1}{6}$ (B) $\frac{1}{3}$
(C) $\frac{1}{2}$ (D) $\frac{2}{3}$

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

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

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 $(4, 14)$ lies on the line $y = 3x + 1$.

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

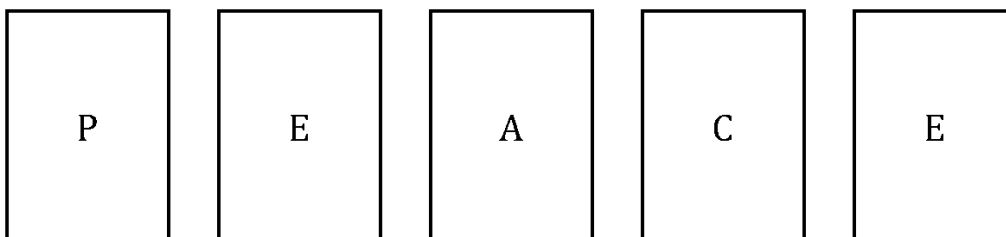
20. Assertion (A): The positive integer 16 has an odd number of positive divisors.

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) The letters of the word 'PEACE' are placed on cards. Leela draws a card without looking. (i) What is the probability that it is a P, E or C? (ii) What is the probability that it is not an E?



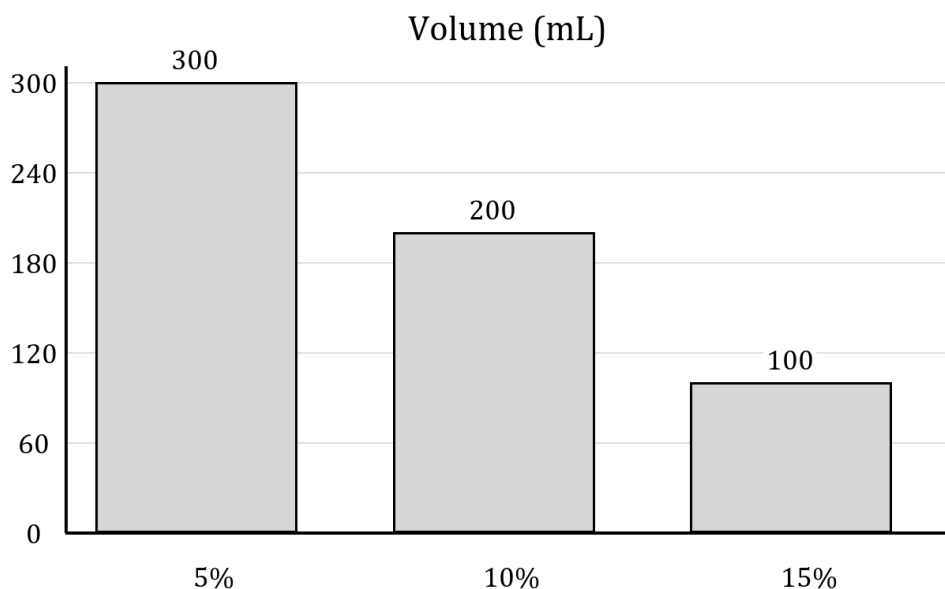
OR

(B) Sarita is reading a book of 500 pages. She reads 20 pages every day. How many pages will be left after 15 days? Express this as a linear pattern.

22. The present age of Salil's mother is three times Salil's present age. After 5 years, their ages will add up to 70 years. Find their present ages.

23. 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.

24. (A) 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.



OR

(B) A cyclic quadrilateral has sides 5, 5, 12, 12 units. Find its area.

25. Quadrilateral PQRS is inscribed in a circle. If $\angle P = (2x + 10)^\circ$ and $\angle R = (3x - 20)^\circ$, find the value of x and the measures of $\angle P$ and $\angle R$.

SECTION C

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

26. (A) Given the points A (1, -8), B (-4, 7) and C (-7, -4), show that they lie on a circle K whose centre is the origin O (0, 0). What is the radius of circle K? Given the points D (-5, 6) and E (0, 9), check whether D and E lie within the circle, on the circle, or outside the circle K.

OR

(B) Check if the points R (-5, -1), B (-2, -5) and C (4, -12) are on the same straight line. Now plot the points and check your answer.

27. (A) An AP consists of 50 terms in which the 3rd term is 12 and the last term is 106. Find the 29th term.

OR

(B) A school provides milk to its students in cylindrical glasses, each with a diameter of 7 cm. If each glass is filled with milk to a height of 12 cm, how many litres of milk are needed to serve 1600 students? Use $1000 \text{ cm}^3 = 1 \text{ litre}$.

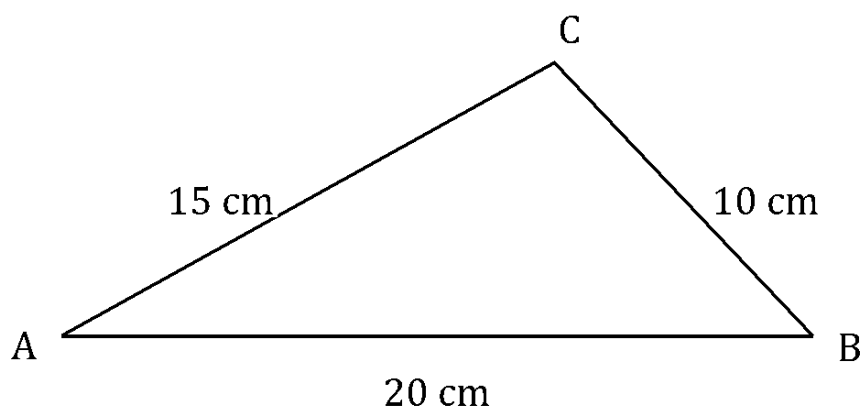
28. Two solid spheres made of the same metal have weights 5920 g and 740 g. Determine the radius of the larger sphere, if the diameter of the smaller one is 5 cm.



29. Write an algorithm $\text{primedivisors}(n)$ to compute the list of divisors of n that are prime numbers.

30. Simplify the rational expression $\frac{x^2-7x+12}{5x^2+5x-100}$, assuming that $5x^2 + 5x - 100 \neq 0$.

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



SECTION D

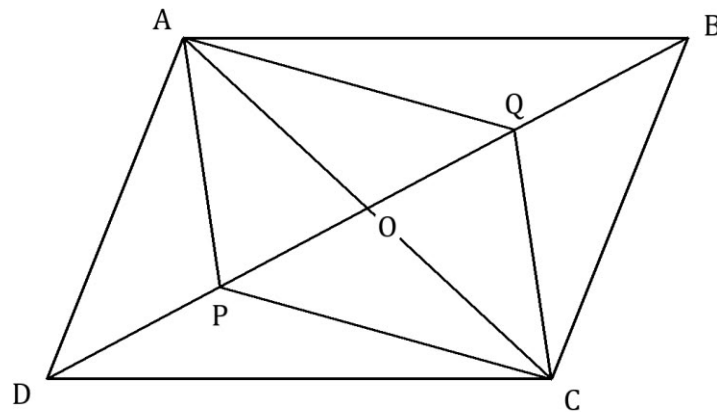
(4 questions $\times$ 5 marks = 20 marks)

32. (A) Show that rectangle is the only parallelogram that can be inscribed in a circle.

OR

(B) Prove that the segment joining the midpoints of two sides of a triangle is parallel to the third side and half of it.

33. In a parallelogram ABCD, two points P and Q are taken on diagonal BD such that $DP = BQ$. Show that APCQ is a parallelogram.



34. (A) The coach of a cricket team buys 7 bats and 6 balls for ₹8880. Later, she buys 3 bats and 5 balls for ₹4000. Find the cost of each bat and each ball.

OR

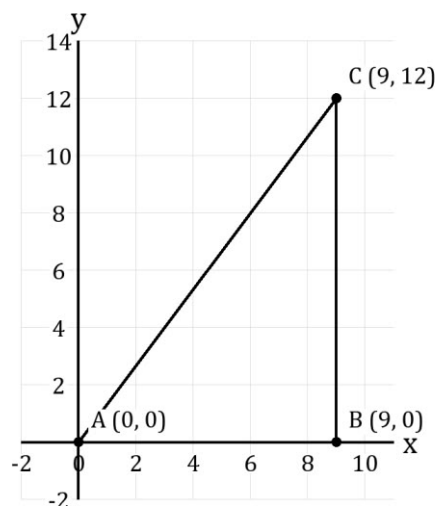
(B) A train moving with uniform speed for a certain distance takes 6 hours less if its speed is increased by 6 km/hour. It would have taken 6 hours more had its speed been decreased by 4 km/hour. Find the distance travelled and the speed of the train.

35. Let $p(x) = ax + b$ and $q(x) = cx + d$ be two linear polynomials such that (i) $p(0) = 5$, (ii) the polynomial $p(x) - q(x)$ cuts the x-axis at $(3, 0)$, (iii) $p(x) + q(x)$ is equal to $6x + 4$ for all real x . Find the polynomials $p(x)$ and $q(x)$.

SECTION E

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

36. A school survey marks three points on a square coordinate grid: A (0, 0), B (9, 0) and C (9, 12). One grid unit represents one metre. The path A–B–C follows two perpendicular sides of the school garden.

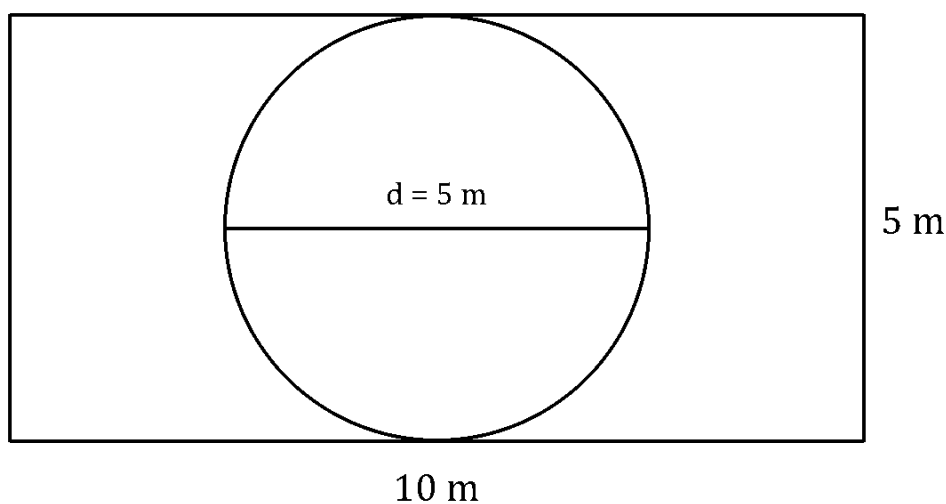


- (i) Find the length AB.
- (ii) Find the length BC.
- (iii) (A) Calculate the direct distance AC and the perimeter of triangle ABC.

OR

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

37. A rectangular lawn measures 10 m by 5 m. A circular flowerbed of diameter 5 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 combines the results of two practice groups. Group A has 12 students with mean score 52; Group B has 17 students with mean score 62. All students took the same test.

- (i) Find the total of Group A's scores.
- (ii) How many students are in the two groups together?
- (iii) (A) Find the combined mean score.

OR

- (iii) (B) A new student joins Group B with score 67. Find the new mean of Group B.