

Mathematics — Ganita Manjari

Sample Question Paper 8

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.

SECTION A

(20 questions × 1 mark = 20 marks)

1. If $x - y = 11$ and $xy = 9$, find $x^2 + y^2$.

- (A) 141 (B) 137
(C) 139 (D) 121

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

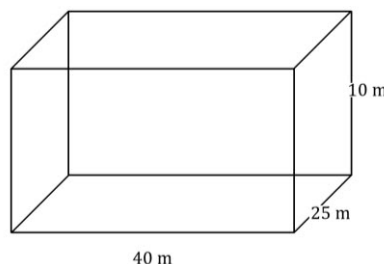
- (A) 30 cm (B) 48 cm
(C) 36 cm (D) 42 cm

3. Find the smallest value of n such that the sum of the first n natural numbers is greater than 1000.

- (A) 46 (B) 50
(C) 44 (D) 45

4. The dimensions of a godown are 40 m × 25 m × 10 m. If it is filled with cuboidal boxes, each of dimensions 2 m × 1.25 m × 1 m, then find the number of boxes.

- (A) 4001
(B) 4002
(C) 4000
(D) 3999



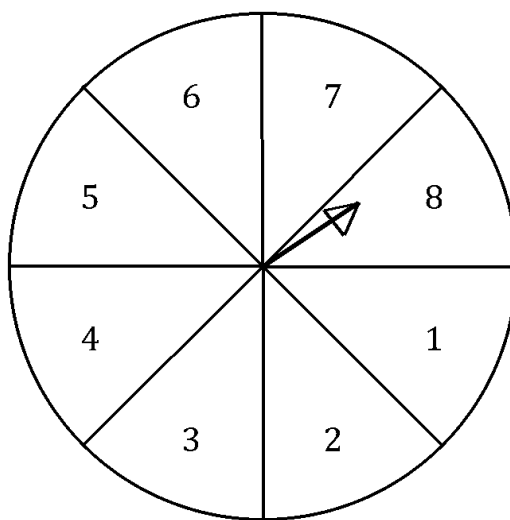
5. What is the x-coordinate of a point on the y-axis?

- (A) Any non-zero number (B) -1
(C) 1 (D) 0

6. 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) 13 cm (B) 5 cm
(C) 10 cm (D) 12 cm

7. 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 a multiple of 3?



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

8. Find the degree of the following polynomial: $2x^2 - 5x + 3$.

- (A) 3 (B) 0
(C) 1 (D) 2

9. 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

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

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

11. Find the value of 198^2 using a suitable identity.

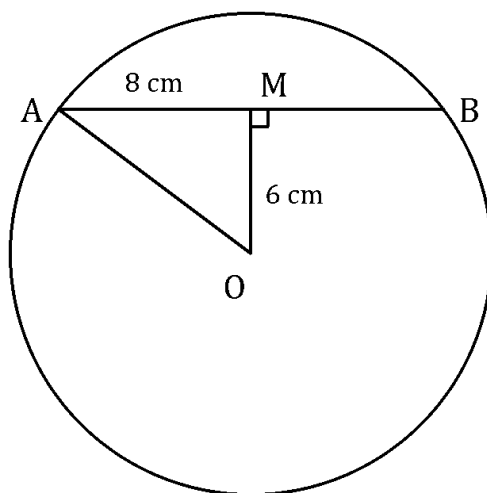
(A) 39206

(B) 39205

(C) 39203

(D) 39204

12. 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) 10 cm

(B) 12 cm

(C) 8 cm

(D) 20 cm

13. Factor completely: $4s^2 + 20st + 25t^2$.

(A) $(2s + 5t)^2$

(B) $(2s - 5t)^2$

(C) $(4s + 5t)^2$

(D) $(2s + 25t)^2$

14. For real numbers x and y: if $x = y$, then $x^2 = y^2$. Is the converse true?

(A) Yes only because squares are positive (B) No; $x = y = 1$ is a counterexample

(C) Yes for all real x and y

(D) No; $x = 1, y = -1$ is a counterexample

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

(A) 3

(B) 12

(C) 2

(D) 6

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

(A) 5

(B) 9

(C) -10

(D) -8

17. How many three-digit numbers are divisible by 7?

(A) 129

(B) 127

(C) 130

(D) 128

18. Find the value of 64^2 using a suitable identity.

(A) 4095

(B) 4098

(C) 4097

(D) 4096

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 (10, 32) 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 100 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. Determine the AP whose third term is 16 and whose 7th term exceeds the 5th term by 12.

22. (A) The difference between two positive integers is 63. The ratio of the two integers is 2 : 5. Find the two integers.

OR

(B) Find the coordinates of B given that M (-7, 1) is the midpoint of A (3, -4) and B (x, y).

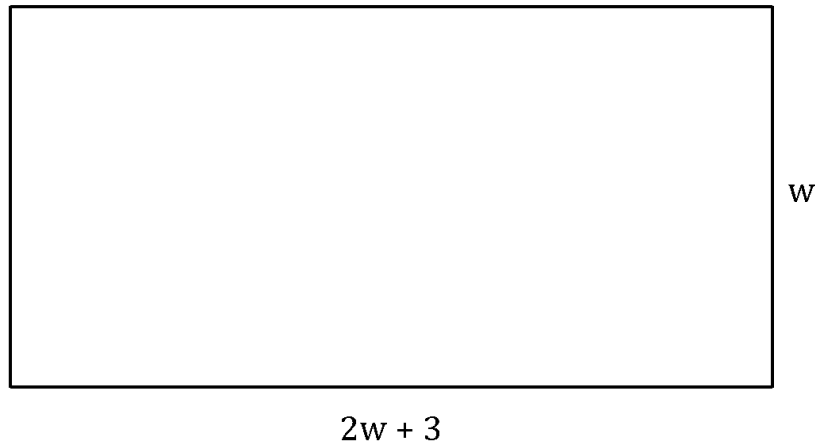
23. (A) Convert $\frac{4}{15}$ into a terminating decimal or a non-terminating repeating decimal by the process of long division.

OR

(B) An isosceles triangle has perimeter 40 cm; the equal sides are 15 cm each. Find the area of the triangle.

24. Find 5 rational numbers between $\frac{1}{6}$ and $\frac{2}{5}$.

25. If the length of a rectangle is three more than twice its width and its perimeter is 24 cm, what are the dimensions of the rectangle?



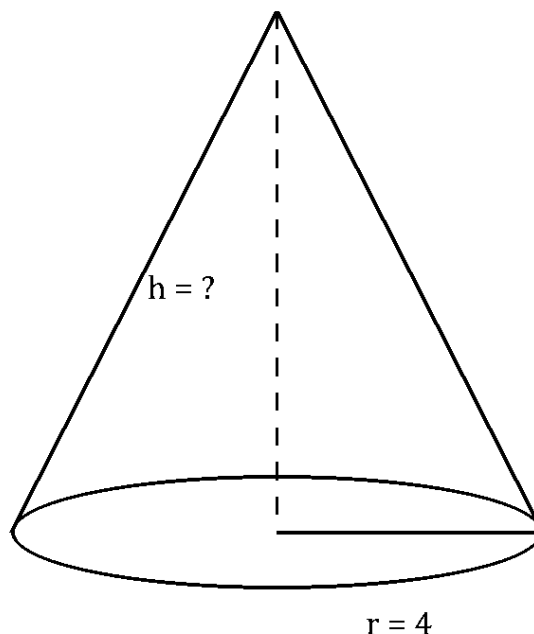
SECTION C

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

26. Which term of the GP: 2, 8, 32, ... is 131072? Write the explicit formula as well as the recursive formula for the n th term.

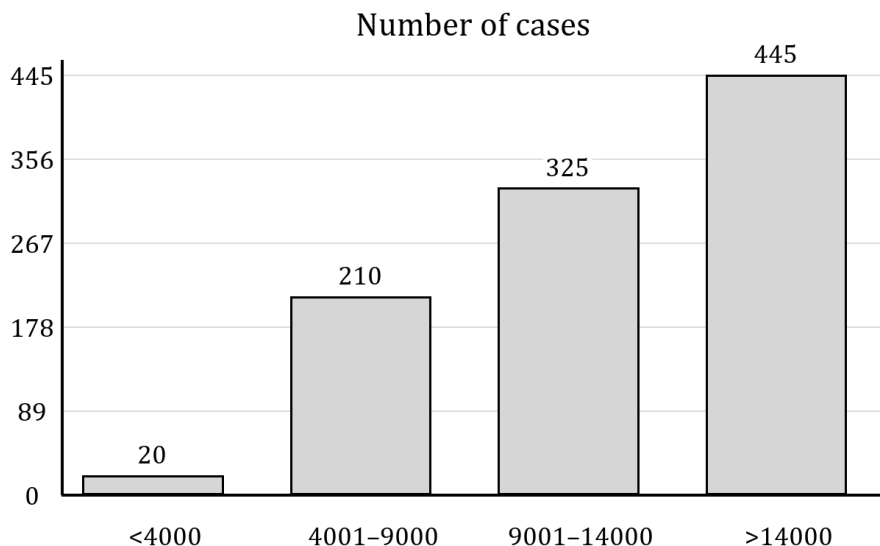
27. Compute $\text{gcd}(2587392, 157656)$ using the improved version of Euclid's algorithm.

28. The surface area of a sphere of radius 5 cm is five times the area of the curved surface of a cone of radius 4 cm. Find the height and the volume of the cone.



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

30. (A) A tyre company records distances before replacement in 1000 cases: less than 4000 km: 20; 4001–9000 km: 210; 9001–14000 km: 325; more than 14000 km: 445. Find the probability that a randomly chosen tyre lasts (i) less than 4000 km, (ii) between 4000 and 14000 km, (iii) more than 14000 km.



OR

(B) Shreyas holds 25 shares of a company at an average price of ₹150 and Vaishnavi holds 5 shares of the same company at an average price of ₹150. (i) Shreyas buys 10 shares at ₹30 each. What is his new average price per share? (ii) Vaishnavi buys some shares at ₹30 each and her new average is ₹70. How many shares did she buy?

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) Write an algorithm prime(n) to check if n is prime.

SECTION D

(4 questions × 5 marks = 20 marks)

32. The price of 9 citrons and 7 fragrant wood-apples taken together is 107; and the price of 7 citrons and 9 fragrant wood-apples taken together is 101. Find the price of each citron and of each fragrant wood-apple.

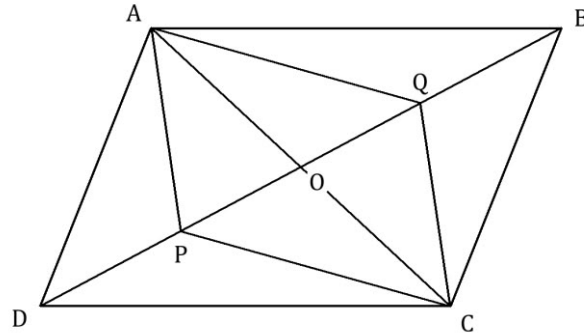
33. (A) A fraction becomes equal to $\frac{9}{11}$ if 2 is added to both the numerator and the denominator. If 3 is added to both the numerator and the denominator, it becomes equal to $\frac{5}{6}$. Find the fraction.

OR

(B) By dividing a trapezium into two triangles show that its area is half the sum of the parallel sides multiplied by the height.

34. Show that rectangle is the only parallelogram that can be inscribed in a circle.

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



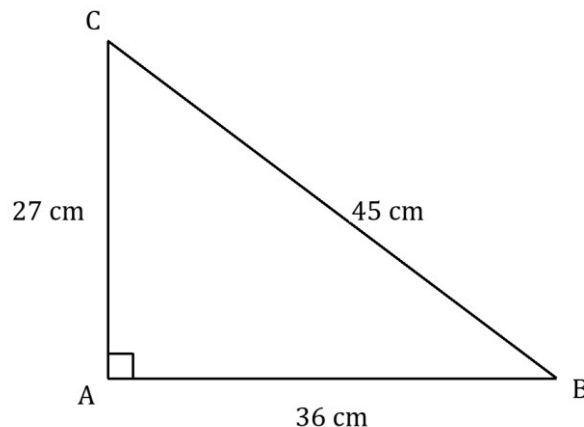
OR

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

SECTION E

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

36. A triangular panel has sides 27 cm, 36 cm and 45 cm, as shown in figure. Students compare two ways of calculating its area.



(i) Find the perimeter.

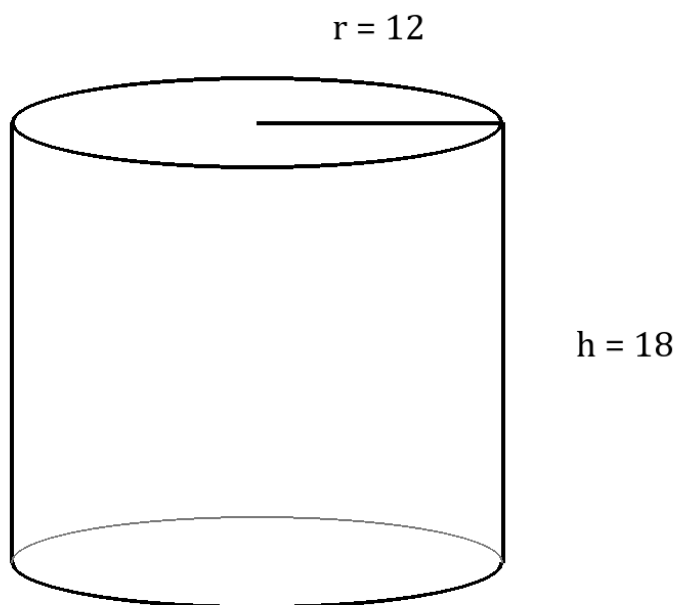
(ii) Find the semi-perimeter.

(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.

37. A craft group makes a closed cylindrical storage box. In figure, its radius is 12 cm and its height is 18 cm. Give answers in terms of π .



- (i) Find the base diameter.
- (ii) Find the area of one circular base.
- (iii) (A) Find the curved surface area and the total surface area.

OR

- (iii) (B) Find the volume. If the height is doubled and the radius is unchanged, find the new volume.

38. Tiwari Academy organises a reading challenge. A student reads 11 pages on the first day and 2 more pages on each successive day. Assume the pattern continues for at least ten days.

- (i) State the common difference.
- (ii) How many pages are read on Day 4?
- (iii) (A) Find the pages read on Day 10 and how many more this is than on Day 4.

OR

- (iii) (B) Write explicit and recursive formulae for the number of pages read on Day n .