

Mathematics — Ganita Manjari

Sample Question Paper 5

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. Find the degree of the following polynomial: -9 .

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

2. Find the value of 117^2 using a suitable identity.

(A) 13690 (B) 13689
(C) 13688 (D) 13691

3. The dimensions of a godown are $40\text{ m} \times 25\text{ m} \times 10\text{ m}$. If it is filled with cuboidal boxes, each of dimensions $2\text{ m} \times 1.25\text{ m} \times 1\text{ m}$, then find the number of boxes.

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

4. The diameter of a circle is AB. Point C is on the circumference. What is the measure of $\angle ACB$? Explain your reasoning.

(A) 45° (B) 180°
(C) 60° (D) 90°

5. You are given two options: (A) one chocolate cube of side 50 mm, (B) hundred chocolate cubes of side 10 mm. Which option gives you more chocolate?

(A) Option A (B) Cannot be determined
(C) Option B (D) Both give equal amounts

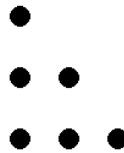
6. Find the 17th triangular number.



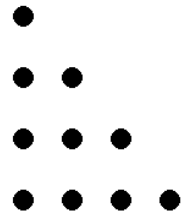
Stage 1



Stage 2



Stage 3



Stage 4

(A) 152

(B) 155

(C) 154

(D) 153

7. If n is divisible by 24, then it is divisible by both 4 and 6. Is the converse true?

(A) Yes; $4 \times 6 = 24$

(B) Yes for every positive integer n

(C) No; $n = 12$ is a counterexample

(D) No; $n = 24$ is a counterexample

8. In a T20 match, a team scored 6 runs in the first over. In the second over they scored 12 runs. What is the run rate now?

(A) 11

(B) 10

(C) 9

(D) 8

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

(A) 0

(B) 1

(C) 2

(D) $\frac{1}{2}$

10. In a circle with centre O , the central angle AOB is 60° . If the radius of the circle is 12 cm, what is the length of the chord AB ?

(A) 6 cm

(B) 18 cm

(C) 24 cm

(D) 12 cm

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

(A) 4

(B) 6

(C) 3

(D) 5

12. 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) $\frac{1}{4}$

(B) $\frac{1}{8}$

(C) 1

(D) $\frac{1}{2}$

13. Give a formula to find the x-intercept of the line $y = mx + c$, where $m \neq 0$.

- (A) $\frac{c}{m}$ (B) $-\frac{m}{c}$
(C) $-\frac{c}{m}$ (D) mc

14. Find the value of 1120^2 using a suitable identity.

- (A) 1254402 (B) 1254400
(C) 1254401 (D) 1254399

15. Find S_{50} , the sum of the first 50 natural numbers.

- (A) 1277 (B) 1276
(C) 1274 (D) 1275

16. If $x - y = 8$ and $xy = 6$, find $x^2 + y^2$.

- (A) 76 (B) 74
(C) 64 (D) 78

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

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

18. Let ABCD be a quadrilateral. List all sides of ABCD adjacent to side AB. List all sides opposite to AB.

- (A) Adjacent: AD, BC; opposite: CD (B) Adjacent: AC, BD; opposite: CD
(C) Adjacent: BC, CD; opposite: AD (D) Adjacent: AD, CD; opposite: BC

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 (7, 17) 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 49 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.

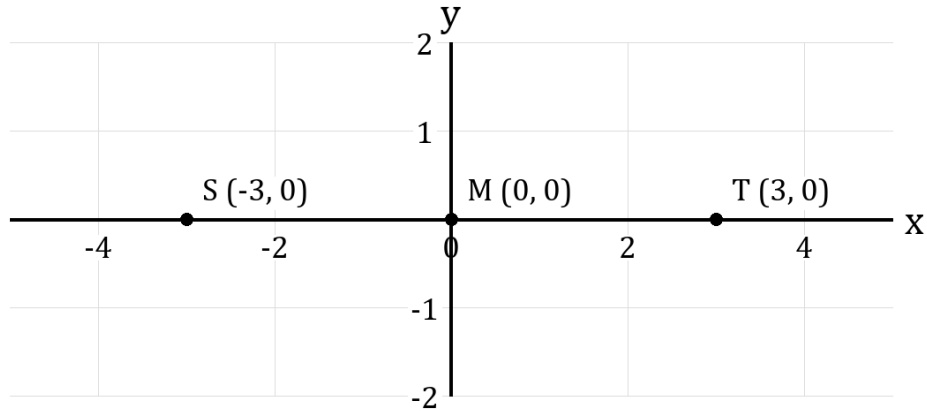
SECTION B

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

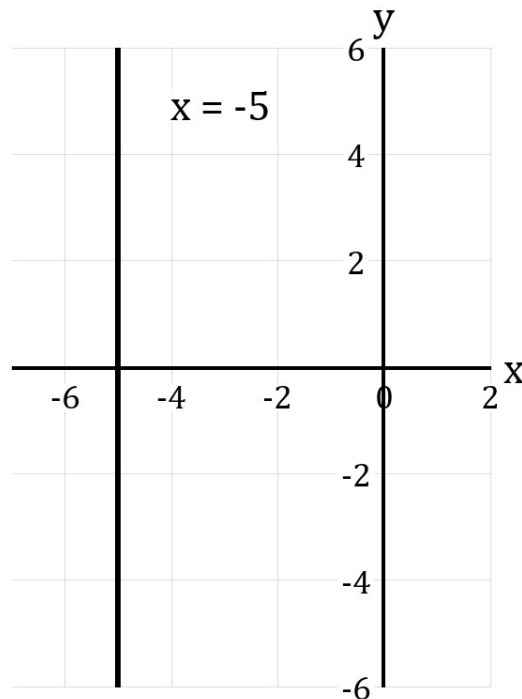
21. If you have ₹800 and you save ₹250 every month, find the amount you have after (i) 6 months (ii) 2 years. Express this as a linear pattern.

22. State whether M is the midpoint of segment ST. Justify your answer.

S (-3, 0), M (0, 0), T (3, 0).



23. (A) Point W has x-coordinate equal to -5. Can you predict the coordinates of point H which is on the line through W parallel to the y-axis? Which quadrants can H lie in?



OR

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

24. Find 5 rational numbers between $\frac{2}{5}$ and $\frac{3}{5}$.

25. (A) Find 6 rational numbers between 3 and 4.

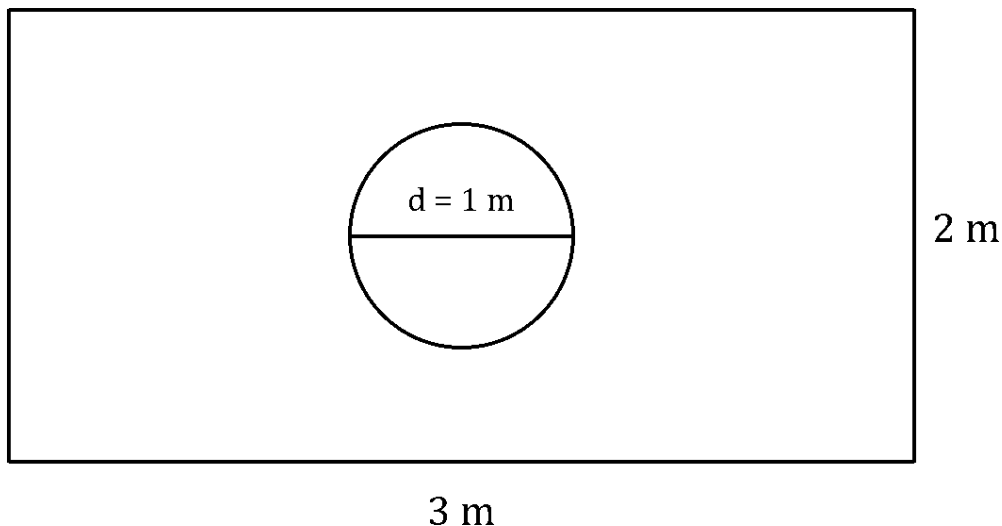
OR

(B) If the wheel of a bicycle has a diameter of 60 cm, find how far a cyclist will have travelled after the wheel has rotated 100 times.

SECTION C

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

26. Suppose you drop a dye at random on the rectangular region shown in figure. What is the probability that it will land inside the circle with a diameter of 1 m?



27. A learning platform charges a fixed monthly fee and an additional cost per digital learning module accessed. A student observes that when she accessed 10 modules, her bill was ₹400. When she accessed 14 modules, her bill was ₹500. If the monthly bill y depends on the number of modules accessed, x , according to the relation $y = ax + b$, find the values of a and b .

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

OR

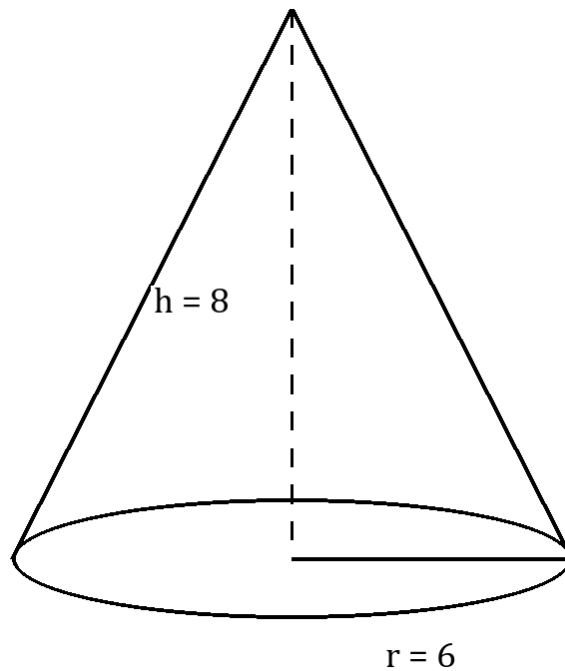
(B) A basket contains 4 red balls and 5 blue balls. One ball is drawn and laid aside, and a second ball is drawn. Draw a tree diagram to represent the possible outcomes and probabilities. Use it to find (i) the probability of drawing a red ball and then a blue ball, (ii) the probability of drawing 2 blue balls.

29. (A) Find the value of $x^3 - 8y^3 - 36xy - 216$, when $x = 2y + 6$.

OR

(B) Write an algorithm $\text{prime}(n)$ to check if n is prime.

30. 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.

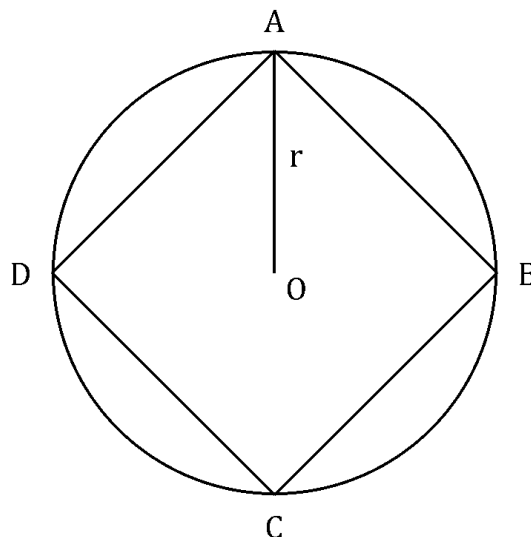


31. At a panipuri stall, the concentration of spice in the pani was 8%. What quantity of regular water should be mixed into the 10 litres of pani so that the spice level is reduced to three-fourths of the original concentration?

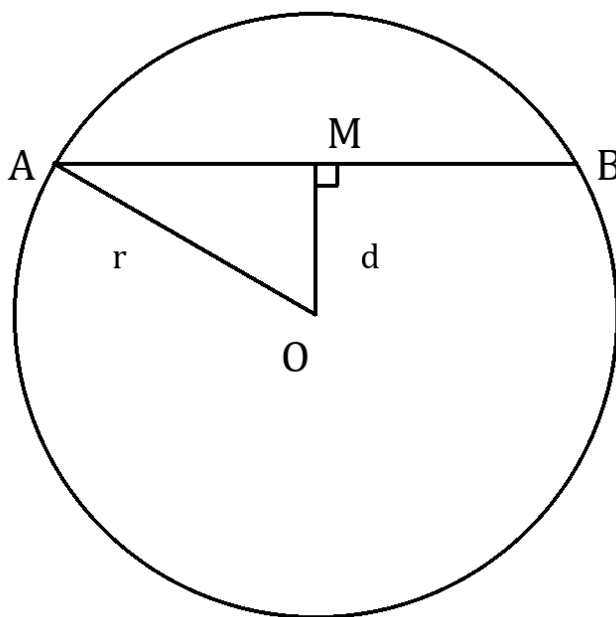
SECTION D

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

32. A square is inscribed in a circle of radius r . Show that the ratio of the area of the square to the area of the circle is $\frac{2}{\pi}$.



33. (A) 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 $2\sqrt{r^2 - d^2}$.



OR

(B) An equilateral triangle is inscribed in a circle of radius r . Show that the ratio of the area of the triangle to the area of the circle is $\frac{3\sqrt{3}}{4\pi}$.

34. (A) 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?

OR

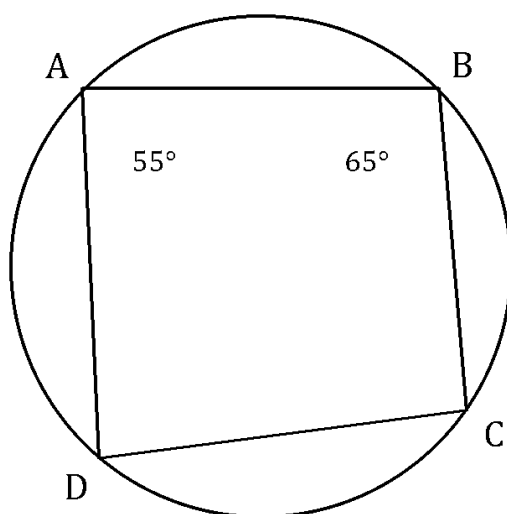
(B) If we add 1 to the numerator and subtract 1 from the denominator, a fraction reduces to 1. It becomes equal to $\frac{1}{2}$ if we add 1 only to the denominator. What is the fraction?

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 $\times$ 4 marks = 12 marks)

36. A designer draws a cyclic quadrilateral ABCD for a circular mosaic. In figure, $\angle A = 55^\circ$ and $\angle B = 65^\circ$. The four vertices lie on the circle.

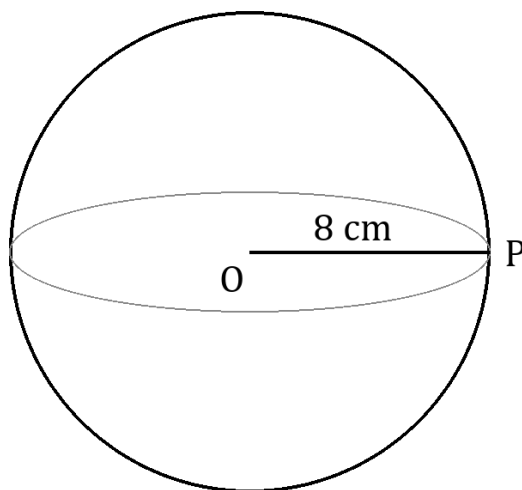


- (i) Find $\angle C$.
- (ii) Find $\angle D$.
- (iii) (A) Verify numerically that both pairs of opposite angles are supplementary.

OR

- (iii) (B) AB is extended beyond B to E. Find $\angle CBE$ and explain its relation to $\angle D$.

37. A spherical model of radius 8 cm is made for an exhibition. In figure, O is its centre and P lies on its surface. Give answers in terms of π .



- (i) Find OP.
- (ii) Find the diameter.

(iii) (A) Find its surface area and volume.

OR

(iii) (B) The model is cut into two hemispheres. Find the curved surface area and total surface area of one hemisphere.

38. A printing service prepares practice booklets for Tiwari Academy. Its charge is a fixed setup fee of ₹35 plus ₹9 per booklet. If x booklets are ordered, the total charge is represented by $C(x)$.

(i) Write the linear polynomial $C(x)$.

(ii) Find $C(0)$ and explain its meaning.

(iii) (A) Find the charge for 10 booklets and the extra charge for increasing the order to 15 booklets.

OR

(iii) (B) Tiwari Academy pays ₹251. How many booklets were ordered?