

Mathematics — Ganita Manjari

Sample Question Paper 15

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 $\times$ 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) 12 cm (B) 13 cm
(C) 10 cm (D) 5 cm

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

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

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

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

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

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

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

- (A) 3000 (B) 3002
(C) 3001 (D) 2999

6. Find the value of 105^2 using a suitable identity.

(A) 11027

(B) 11025

(C) 11026

(D) 11024

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

(A) None

(B) Exactly two

(C) Infinitely many

(D) Exactly one

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

(A) 0

(B) 2

(C) 3

(D) 1

9. Find the value of 65^2 using a suitable identity.

(A) 4225

(B) 4224

(C) 4226

(D) 4227

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

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

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

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

(D) Yes for every positive integer n

11. The number $0.99999\dots$ is exactly equal to ____.

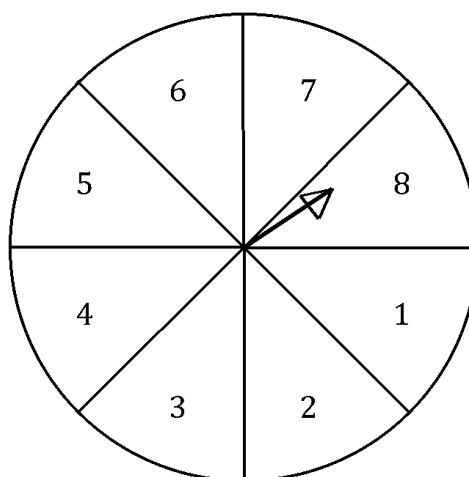
(A) 1

(B) 0.9

(C) 0.999

(D) 0.99

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 a number greater than 2?



(A) $\frac{3}{4}$

(B) $\frac{7}{8}$

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

(D) $\frac{1}{4}$

13. Factor completely: $49x^2 + 28xy + 4y^2$.

(A) $(7x - 2y)^2$

(B) $(7x + 4y)^2$

(C) $(49x + 2y)^2$

(D) $(7x + 2y)^2$

14. Find the value of 205^2 using a suitable identity.

(A) 42026

(B) 42024

(C) 42025

(D) 42027

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

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

(B) 2

(C) 1

(D) 0

16. If $x - y = 18$ and $xy = 16$, find $x^2 + y^2$.

(A) 356

(B) 358

(C) 324

(D) 354

17. 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) 4000

(B) 4002

(C) 4001

(D) 3999

18. Find S_{1000} , the sum of the first 1000 natural numbers.

(A) 500502

(B) 500499

(C) 500501

(D) 500500

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 $(17, 37)$ lies on the line $y = 2x + 3$.

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

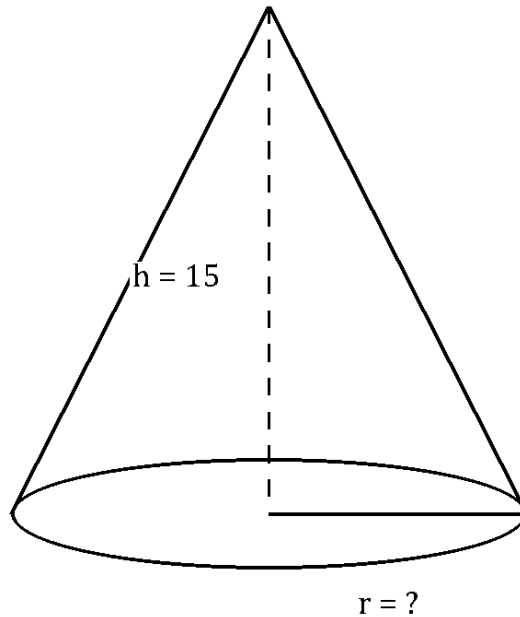
20. Assertion (A): The positive integer 289 has an odd number of positive divisors.

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 cone has a height of 15 cm. If its volume is 1570 cm^3 , find the radius of the base. (Use $\pi = 3.14$.)



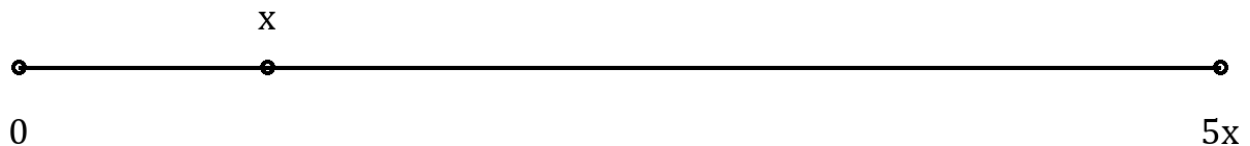
22. (A) Find the 10th and n th terms of the GP: 5, 25, 125, ...

OR

(B) State whether M is the midpoint of segment ST. Justify your answer.
S (2, 3), M (3, 4), T (4, 5).

23. 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?

24. A farmer cuts a 300 feet fence into two pieces of different sizes. The longer piece is four times as long as the shorter piece. How long are the two pieces?



25. (A) Convert $\frac{13}{250}$ into a terminating decimal or a non-terminating repeating decimal by the process of long division.

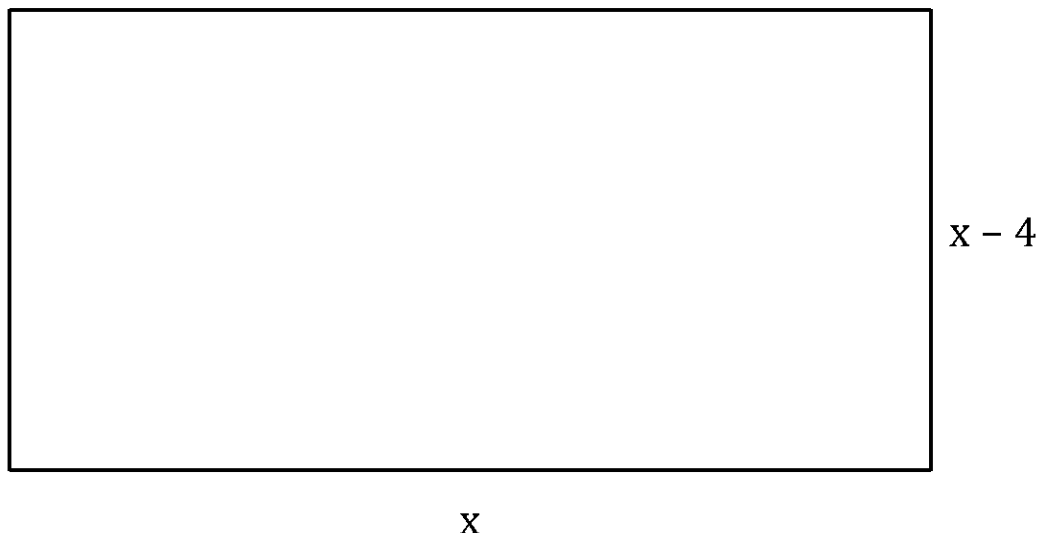
OR

(B) 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.

SECTION C

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

26. 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.



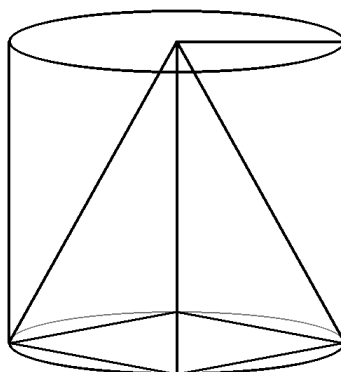
27. Compute $\text{gcd}(1789287, 237656)$ using the improved version of Euclid's algorithm.

28. (A) A pool 30 *hastas* long is dug to different depths along its length. It is divided into 5 sections having lengths 4, 5, 6, 7, and 8 *hastas*, and is dug to depths of 9, 7, 7, 3, and 2 *hastas*, respectively. Find the mean depth of the pool.

OR

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

29. A cylinder has base radius r cm and height h cm. A square pyramid is fitted inside it. The square base of the pyramid lies on the base of the cylinder, its corners on the boundary of the cylinder. The apex of the pyramid lies on the top of the cylinder. Find the ratio of the volume of this pyramid to the volume of the cylinder.



30. (A) 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.

OR

(B) 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.

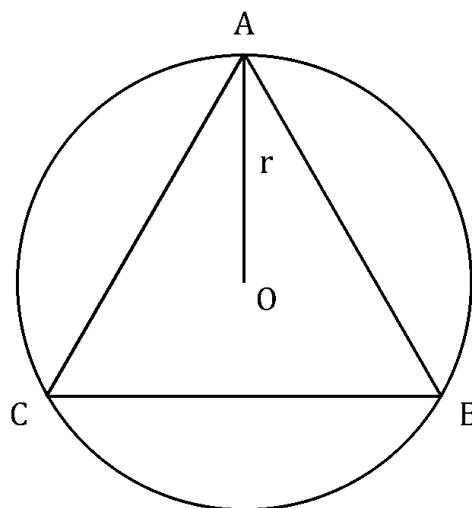
31. You have a box containing 3 red pens, 4 black pens and 2 green pens. You pick a pen (without looking) from the box and put it back. Then your friend does the same. (i) What are the possible outcomes of the pen colours? Draw a tree diagram representing the possible outcomes. (ii) Find the probability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

SECTION D

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

32. 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 $q(x)$.

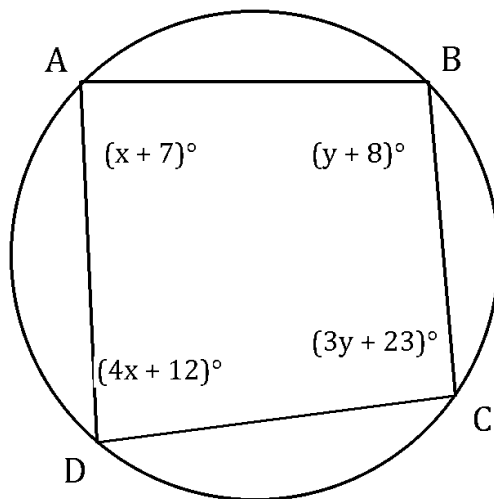
33. (A) An equilateral triangle is inscribed in a circle of radius r. Show that the ratio of the area of the triangle to the area of the circle is $\frac{3\sqrt{3}}{4\pi}$.



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.

34. 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.



35. (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) Suppose the midpoints of sides AB, BC, CD and DA of a quadrilateral ABCD are P, Q, R and S respectively.

- (i) Show that PR and QS bisect each other.
 - (ii) Show that if $AC = BD$, then PR and QS are perpendicular.
- Is the converse true?

SECTION E

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

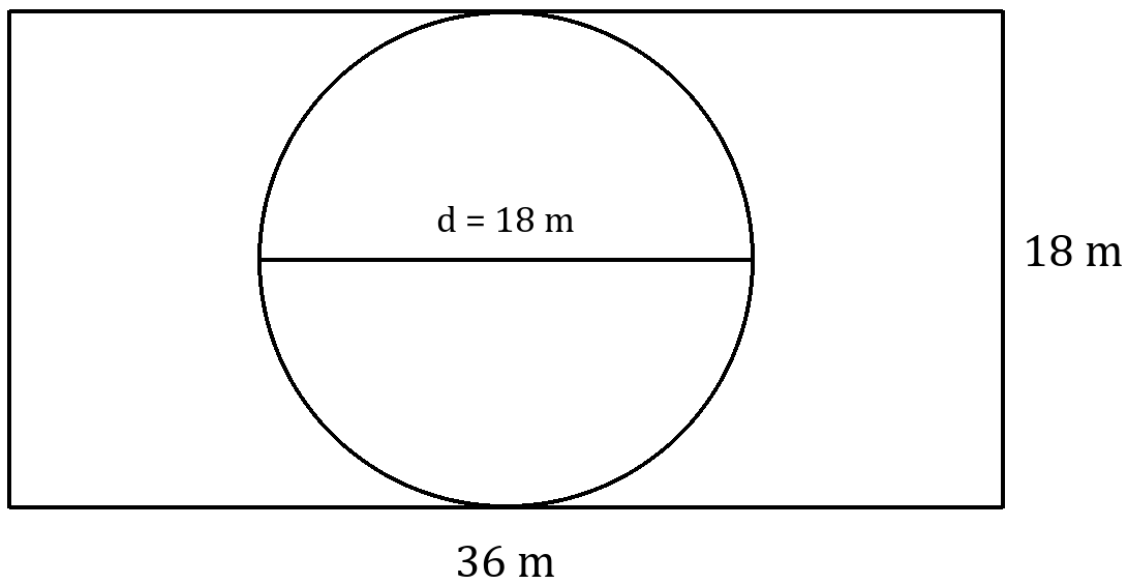
36. A printing service prepares practice booklets for Tiwari Academy. Its charge is a fixed setup fee of ₹65 plus ₹19 per booklet. If x booklets are ordered, the total charge is represented by $C(x)$.

- (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 ₹521. How many booklets were ordered?

37. A rectangular lawn measures 36 m by 18 m. A circular flowerbed of diameter 18 m is placed wholly inside it, as shown in figure. Express answers involving the circle in terms of π .

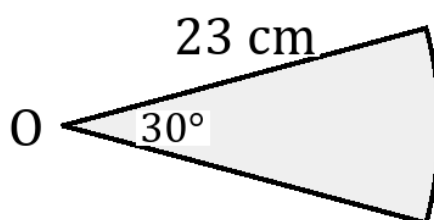


- (i) Find the area of the rectangular lawn.
- (ii) Find the radius of the flowerbed.
- (iii) (A) Find the flowerbed area and the lawn area outside it.

OR

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

38. A circular display has radius 23 cm. A coloured sector subtends 30° at the centre O, as shown in figure. Express lengths and areas in terms of π .



- (i) What fraction of the circle is coloured?
- (ii) Find the angle of the uncoloured sector.
- (iii) (A) Find the coloured area and the length of its arc.

OR

- (iii) (B) Find the uncoloured area and the perimeter of the coloured sector.