

Mathematics — Ganita Manjari

Sample Question Paper 6

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 $x - y = 9$ and $xy = 7$, find $x^2 + y^2$.

- (A) 95 (B) 81
(C) 97 (D) 93

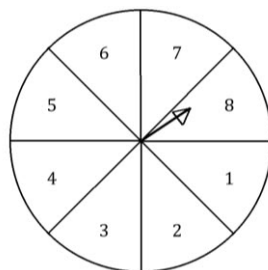
2. What is the x-coordinate of a point on the y-axis?

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

3. 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) 42 cm (D) 36 cm

4. 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) $\frac{1}{4}$ (B) $\frac{1}{2}$
(C) $\frac{3}{4}$ (D) $\frac{7}{8}$

- 5.** 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) 5 cm
(C) 12 cm (D) 13 cm
- 6.** 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) 4 (B) 3
(C) 1 (D) 2
- 7.** Given some data with corresponding weights, how would the weighted average change if all the weights are doubled?
- (A) It remains unchanged (B) It halves
(C) It doubles (D) It increases by 2
- 8.** Compute $\gcd(51000, 81000)$ using the improved version of Euclid's algorithm.
- (A) 3002 (B) 3001
(C) 2999 (D) 3000
- 9.** Find the value of 65^2 using a suitable identity.
- (A) 4227 (B) 4226
(C) 4225 (D) 4224
- 10.** Find the value of the linear polynomial $5x - 3$ if $x = -1$.
- (A) -8 (B) -7
(C) -9 (D) -6
- 11.** List all angles of quadrilateral ABCD adjacent to $\angle A$. List all angles opposite to $\angle A$.
- (A) Adjacent: $\angle A, \angle C$; opposite: $\angle B$
(B) Adjacent: $\angle C, \angle D$; opposite: $\angle B$
(C) Adjacent: $\angle B, \angle D$; opposite: $\angle C$
(D) Adjacent: $\angle B, \angle C$; opposite: $\angle D$
- 12.** 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) -3 and 6
(C) -2 and 7 (D) 6 and 3
- 13.** Find the value of 105^2 using a suitable identity.
- (A) 11025 (B) 11027
(C) 11024 (D) 11026

14. Is 1, -1, 1, -1, 1, ... a geometric progression? If so, what is the common ratio?

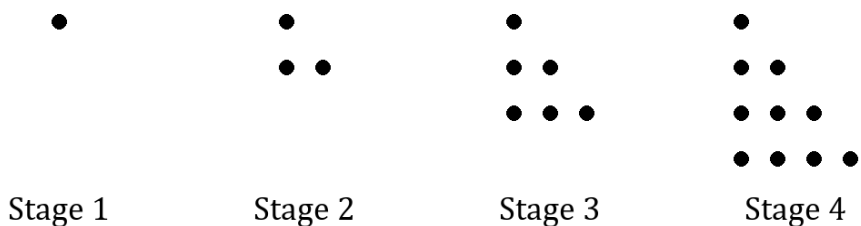
(A) No

(B) Yes; 4

(C) Yes; -1

(D) Yes; 1

15. Find the 10th triangular number.



(A) 54

(B) 57

(C) 56

(D) 55

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

(A) No; $x = y = 1$ is a counterexample

(B) Yes only because squares are positive

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

(D) Yes for all real x and y

17. Find the value of $(127)^3$ using a suitable identity.

(A) 2048385

(B) 2048384

(C) 2048383

(D) 2048382

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

(A) None

(B) Infinitely many

(C) Exactly one

(D) Exactly two

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 (8, 26) lies on the line $y = 3x + 1$.

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

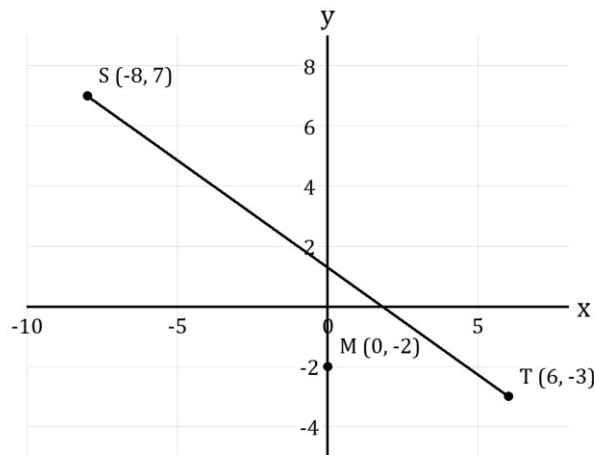
20. Assertion (A): The positive integer 64 has an odd number of positive divisors.

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).



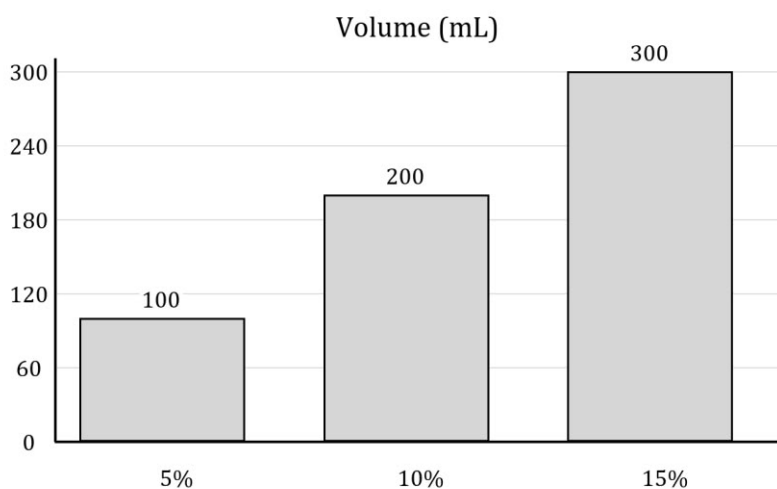
OR

(B) 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. Using algebra, explain why $0.99999\dots$ is exactly equal to 1.

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

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



OR

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

25. Find (i) the curved surface area and (ii) the total surface area of a hemisphere of radius 21 cm.

SECTION C

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

26. A positive number is 5 times another number. If 21 is added to both the numbers, then one of the new numbers becomes twice the other new number. What are the numbers?

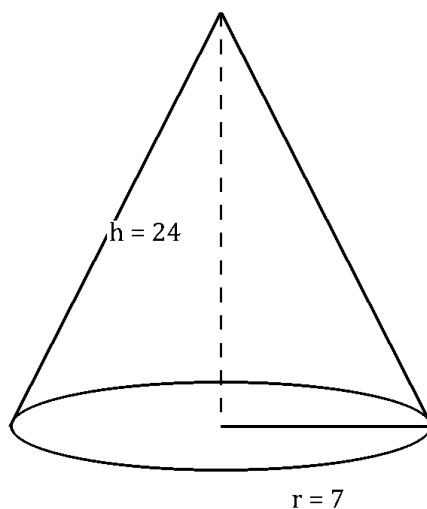
27. Find the value of $x^3 + y^3 - 12xy + 64$, when $x + y = -4$.

28. (A) The digits of a two-digit number differ by 3. If the digits are interchanged, and the resulting number is added to the original number, we get 143. Find both the numbers.

OR

(B) 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.

29. (A) A joker's cap is in the form of a right circular cone of base radius 7 cm and height 24 cm. Find the area of the sheet required to make 10 such caps.



OR

(B) 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 $\angle BAC$ ".

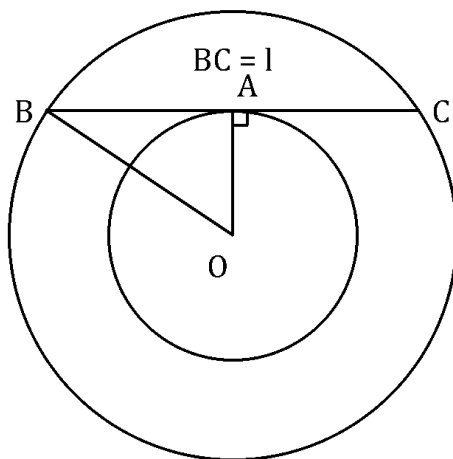
30. Which term of the GP: 2, 6, 18, ... is 4374? Write the explicit formula as well as the recursive formula for the n th term.

31. Three coins are tossed simultaneously. Write the sample space and calculate the probability of getting exactly two heads.

SECTION D

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

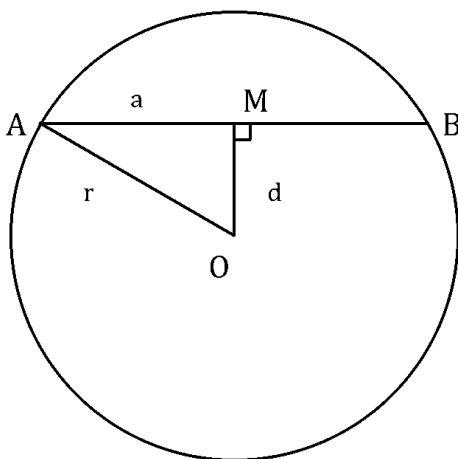
32. (A) In figure, two concentric circles have a common centre O. A chord BC of the larger circle touches the smaller circle at A. The length of BC is l . Show that the area of the region enclosed between the two circles is $\frac{1}{4}\pi l^2$.



OR

(B) The diagonals AC and BD of a parallelogram ABCD intersect at O. A line through O meets AB and CD at points P and Q respectively. Show that O is the midpoint of PQ.

33. Prove that the perpendicular bisector of a chord passes through the centre of the circle.



34. The sum of the digits of a two-digit number is 9. Also, nine times this number is twice the number obtained by reversing the order of the digits. Find the number.

35. (A) The sum of the first three terms of a geometric progression is 26, and the sum of their squares is 364. Find the terms of the GP.

OR

(B) Solve the following system of equations graphically: $2x + y = 6$, $2x - y - 2 = 0$.

SECTION E

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

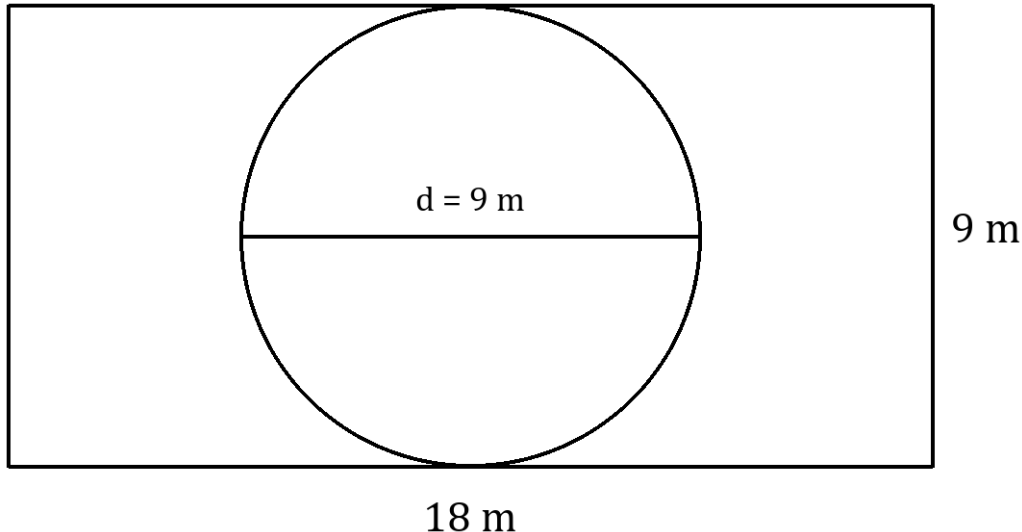
36. Tiwari Academy has 42 pencils and 56 erasers for identical prize packets. Every packet must contain the same number of pencils and the same number of erasers, with no items left over.

- (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 14 packets are made, find the contents of each packet and verify the totals.

37. A rectangular lawn measures 18 m by 9 m. A circular flowerbed of diameter 9 m is placed wholly inside it, as shown in figure. Express answers involving the circle in terms of π .

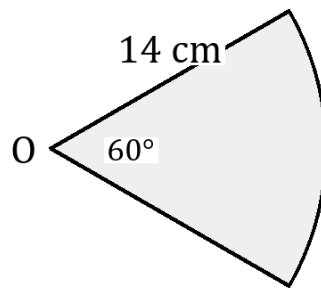


- (i) Find the area of the rectangular lawn.
- (ii) Find the radius of the flowerbed.
- (iii) (A) Find the flowerbed area and the lawn area outside it.

OR

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

38. A circular display has radius 14 cm. A coloured sector subtends 60° 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.