

Mathematics — Ganita Manjari

Sample Question Paper 13

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. Compute $\gcd(99, 2)$ using the improved version of Euclid's algorithm.

- (A) 5 (B) 3
(C) 4 (D) 1

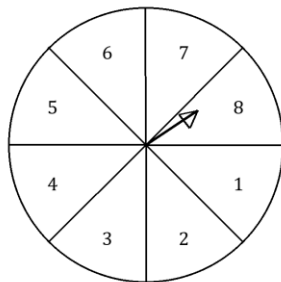
2. Find the value of $(-107)^3$ using a suitable identity.

- (A) -1225042 (B) -1225044
(C) -1225043 (D) -1225041

3. Find the degree of the following polynomial: $y^3 + 2y - 1$.

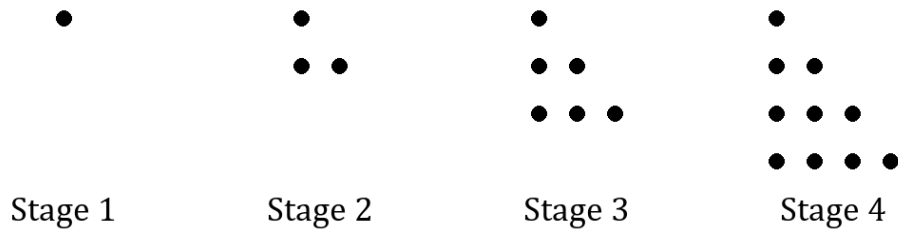
- (A) 3 (B) 1
(C) 2 (D) 0

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 multiple of 3?



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

5. Find the 17th triangular number.



- (A) 154 (B) 155
(C) 153 (D) 152

6. 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) 8 cm
(C) 20 cm (D) 12 cm

7. 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) 9 (B) 10
(C) 11 (D) 8

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

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

9. Find S_{20} , the sum of the first 20 natural numbers.

- (A) 210 (B) 211
(C) 212 (D) 209

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

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

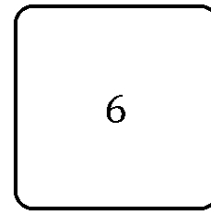
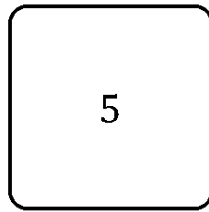
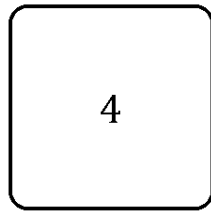
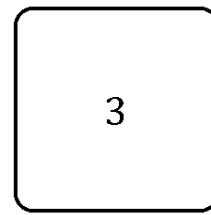
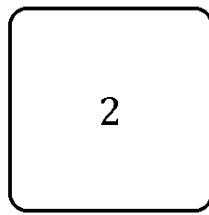
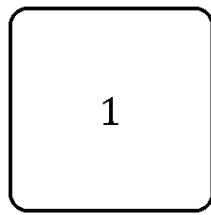
11. You are given two options: (A) one chocolate cube of side 50 mm, (B) hundred chocolate cubes of side 10 mm. Which option gives you more chocolate?

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

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

- (A) 39205 (B) 39204
(C) 39203 (D) 39206

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



- (A) 2
(C) 12

- (B) 6
(D) 3

14. Find the value of $(-299)^3$ using a suitable identity.

- (A) -26730898 (B) -26730899
(C) -26730900 (D) -26730897

15. If $x - y = 16$ and $xy = 14$, find $x^2 + y^2$.

- (A) 286 (B) 256
(C) 284 (D) 282

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

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

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

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

18. Find the value of the quadratic polynomial $7s^2 - 4s + 6$ if $s = 4$.

- (A) 103 (B) 104
(C) 101 (D) 102

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 (15, 33) 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 225 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. Using algebra, explain why $0.99999\dots$ is exactly equal to 1.

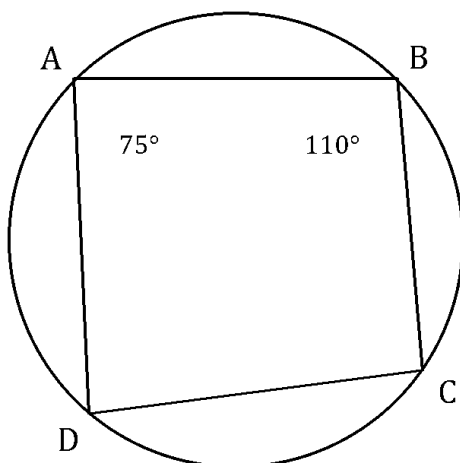
22. Convert $\frac{7}{20}$ into a terminating decimal or a non-terminating repeating decimal by the process of long division.

23. (A) Two cubes each of volume 125 cm^3 are joined end to end. Find the surface area of the resulting cuboid.

OR

(B) 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 $\angle R$.

24. (A) ABCD is a cyclic quadrilateral inscribed in a circle. If $\angle A$ measures 75° , what is the measure of $\angle C$? If $\angle B$ measures 110° , what is the measure of $\angle D$?



OR

(B) Find 6 rational numbers between 3 and 4.

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)

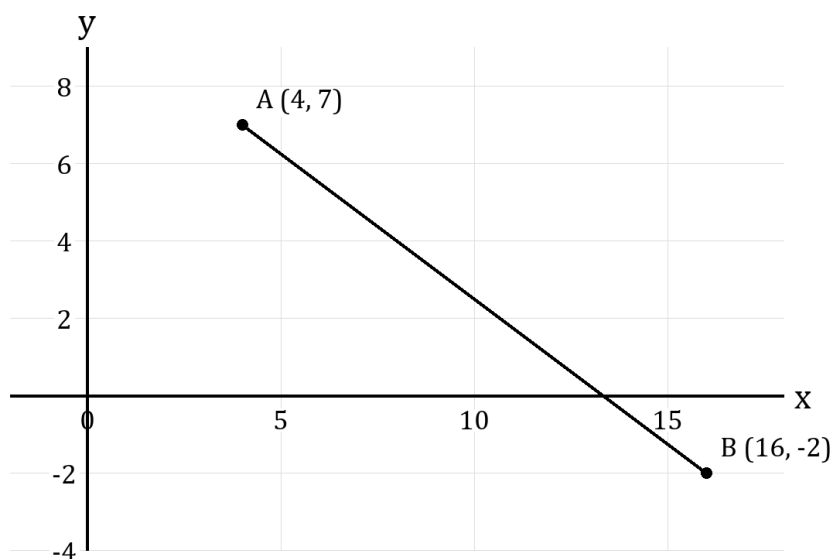
26. A gym charges a fixed monthly fee and an additional cost per hour for using the badminton court. A student using the gym observed that when she used the badminton court for 10 hours, her bill was ₹800. When she used it for 15 hours, her bill was ₹1100. If the monthly bill y depends on the hours of the use of the badminton court, x , according to the relation $y = ax + b$, find the values of a and b .

27. (A) Three coins are tossed simultaneously. Write the sample space and calculate the probability of getting exactly two heads.

OR

(B) A stationery shop owner made ₹8000 selling books, of which 30% is the profit amount, and ₹1000 selling book covers, of which 50% is the profit amount. What is the percentage of profit on the total sales?

28. Let P , Q be points of trisection of AB , with P closer to A , and Q closer to B . Using your knowledge of how to find the coordinates of the midpoint of a segment, how would you find the coordinates of P and Q ? Do this for the case when the points are $A(4, 7)$ and $B(16, -2)$.

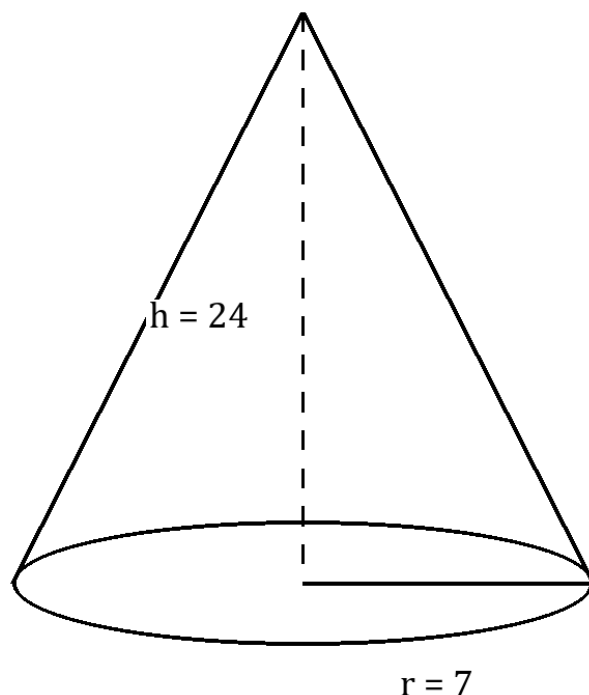


29. (A) An AP consists of 50 terms in which the 3rd term is 12 and the last term is 106. Find the 29th term.

OR

(B) 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.

30. 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.



31. 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.

SECTION D

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

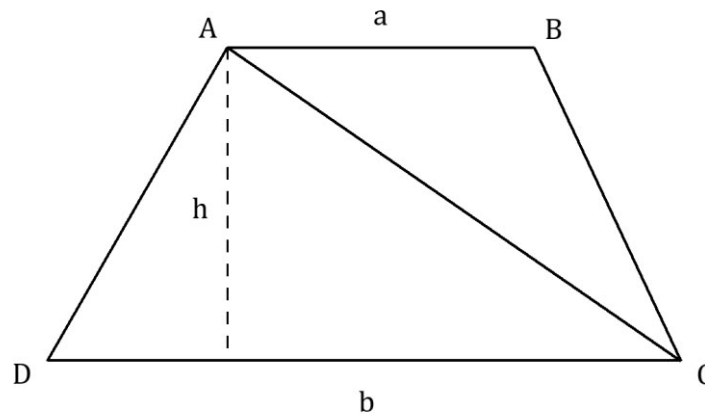
32. (A) Suppose the Earth is perfectly spherical. A string is wrapped tightly around its equator. Another string, 1 metre longer, forms a larger circle, staying the same distance above the ground everywhere. How high above the ground is the second string? Repeat this for (i) the Moon (ii) Jupiter (iii) a volleyball. Are you surprised by the three answers? Why or why not?

OR

(B) Prove that the midpoints of the sides of a quadrilateral form a parallelogram.

33. 5 pencils and 7 pens together cost ₹50, whereas 7 pencils and 5 pens together cost ₹46. Find the cost of each pencil and pen.

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



OR

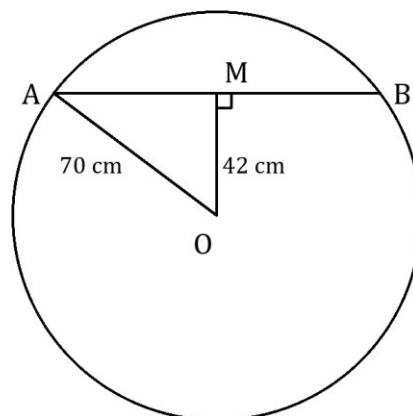
(B) The price of 9 citrons and 7 fragrant wood-apples taken together is 107; and the price of 7 citrons and 9 fragrant wood-apples taken together is 101. Find the price of each citron and of each fragrant wood-apple.

35. 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.

SECTION E

(3 questions × 4 marks = 12 marks)

36. A circular window has centre O and radius 70 cm. A straight decorative strip AB is a chord. The perpendicular OM from O to AB measures 42 cm, as shown in figure.



- (i) State the relation between AM and MB.
- (ii) Find $\angle OMB$.
- (iii) (A) Find AM and the full length AB.

OR

- (iii) (B) Find the area and perimeter of triangle OAB.

37. Tiwari Academy organises a reading challenge. A student reads 16 pages on the first day and 3 more pages on each successive day. Assume the pattern continues for at least ten days.

(i) State the common difference.

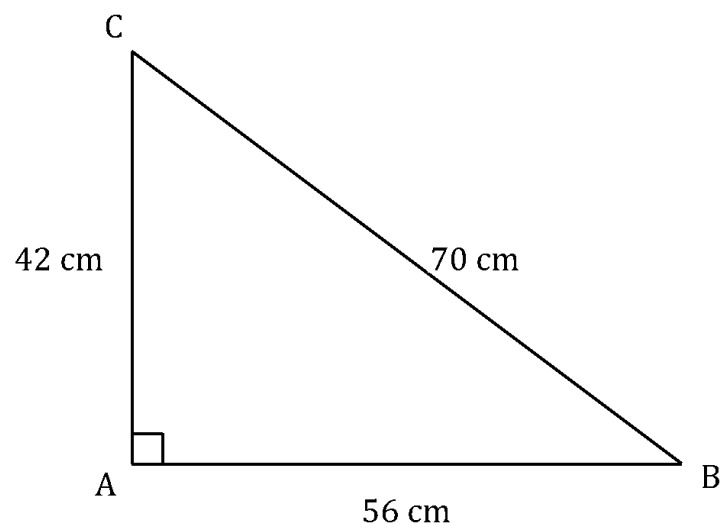
(ii) How many pages are read on Day 4?

(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 .

38. A triangular panel has sides 42 cm, 56 cm and 70 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.