

Mathematics — Ganita Manjari

Sample Question Paper 18

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

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

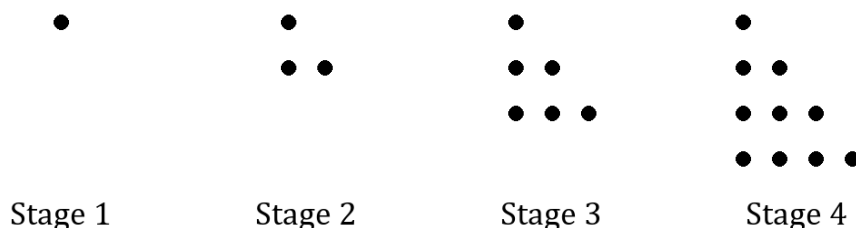
2. In a circle, a chord is 5 cm away from the centre. If the radius of the circle is 13 cm, what is the length of the chord?

- (A) 24 cm (B) 12 cm
(C) 10 cm (D) 26 cm

3. If a quadrilateral is a square, then all its angles are equal. Is the converse true?

- (A) Yes; all rectangles are squares
(B) No; a square is a counterexample
(C) Yes; equal angles imply equal sides
(D) No; a non-square rectangle is a counterexample

4. Find the 80th triangular number.



- (A) 3239 (B) 3240
(C) 3241 (D) 3242

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

- (A) 10 cm each
(C) 13 cm each

- (B) 15 cm each
(D) 12 cm each

6. How many small cubes with side 20 cm can be packed tight in a cubical box with side 2 m?

- (A) 999
(C) 1000

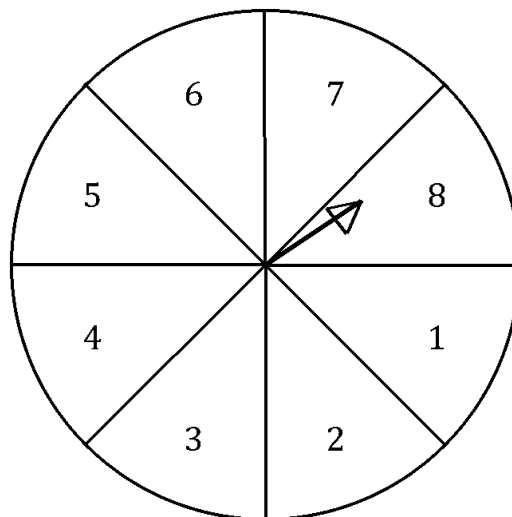
- (B) 1001
(D) 1002

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

- (A) 3
(C) 6

- (B) 5
(D) 4

8. 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 an odd number?



- (A) $\frac{5}{8}$
(C) $\frac{3}{8}$

- (B) $\frac{1}{8}$
(D) $\frac{1}{2}$

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

- (A) 500499
(C) 500501

- (B) 500500
(D) 500502

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

- (A) 1
(C) 3

- (B) 0
(D) 2

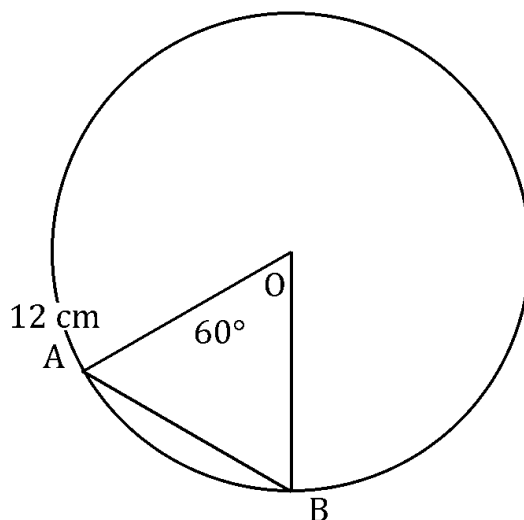
11. Find the value of the linear polynomial $5x - 3$ if $x = 0$.

- (A) -2 (B) -3
(C) -1 (D) -4

12. If $x - y = 21$ and $xy = 19$, find $x^2 + y^2$.

- (A) 481 (B) 477
(C) 441 (D) 479

13. 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) 12 cm
(C) 24 cm (D) 18 cm

14. Find the value of 299^2 using a suitable identity.

- (A) 89402 (B) 89401
(C) 89400 (D) 89403

15. What is the probability of getting an even number when rolling a fair 6-sided die?

- (A) $\frac{2}{3}$ (B) $\frac{1}{2}$
(C) $\frac{1}{6}$ (D) $\frac{1}{3}$

16. Find the value of 193^2 using a suitable identity.

- (A) 37250 (B) 37249
(C) 37248 (D) 37251

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

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

18. Find the value of $(147)^3$ using a suitable identity.

(A) 3176522

(B) 3176523

(C) 3176524

(D) 3176525

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 (20, 62) 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 400 has an odd number of positive divisors.

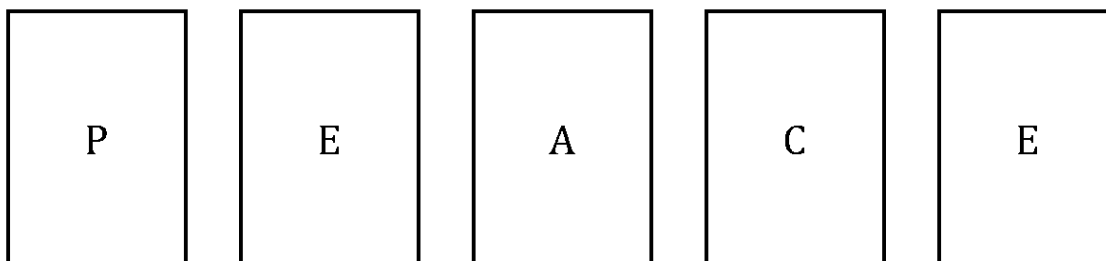
Reason (R): In a perfect square, divisors pair to give the number, with its positive square root paired with itself.

SECTION B

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

21. What would a system of coordinates be like if we did not have negative numbers? Would this system allow us to locate all the points on a 2-D plane?

22. The letters of the word 'PEACE' are placed on cards. Leela draws a card without looking. (i) What is the probability that it is a P, E or C? (ii) What is the probability that it is not an E?



23. (A) Convert $\frac{2}{9}$ into a terminating decimal or a non-terminating repeating decimal by the process of long division.

OR

(B) Find 5 rational numbers between $\frac{2}{5}$ and $\frac{3}{5}$.

24. (A) The present age of Salil's mother is three times Salil's present age. After 5 years, their ages will add up to 70 years. Find their present ages.

OR

(B) Execute the algorithm to compute the divisors of 15.

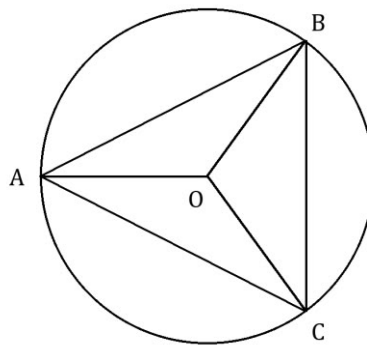
25. A goldsmith melts together three pieces of gold: 9 units at 12 varṇa, 5 units at 10 varṇa, and 17 units at 11 varṇa. Find the purity in varṇa of the combined gold.

SECTION C

(6 questions × 3 marks = 18 marks)

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

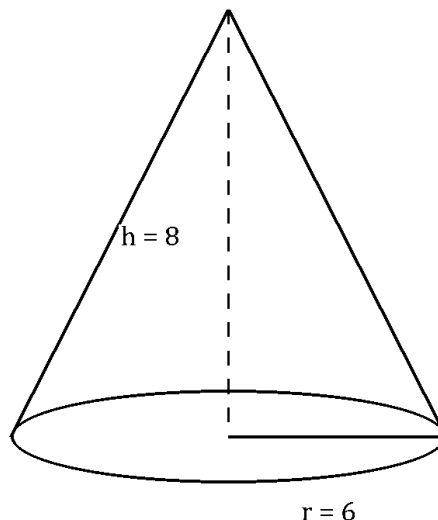
27. (A) In a circle with centre O, chords AB and AC are congruent. Explain why this statement is true: “The centre of the circle lies on the angle bisector of $\angle BAC$ ”.



OR

(B) 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).

28. 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.



29. If the 4th, 10th and 16th terms of a GP are x , y and z respectively, prove that x , y , z are in GP.

30. 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 .

31. (A) 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.

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?

SECTION D

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

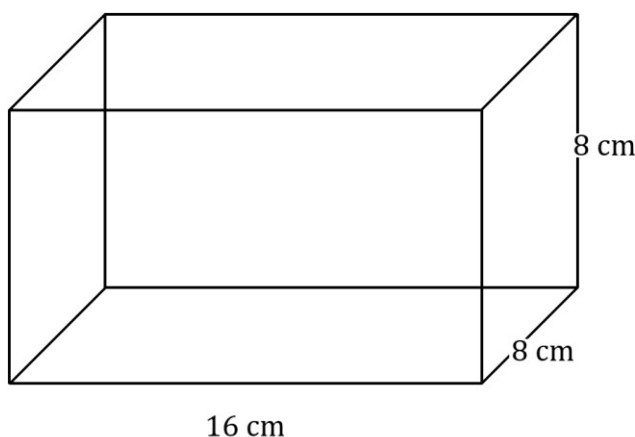
32. Prove that the segment joining the midpoints of two sides of a triangle is parallel to the third side and half of it.

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

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) Metal spheres, each of radius 2 cm, are packed into a rectangular box of internal dimensions 16 cm $\times$ 8 cm $\times$ 8 cm. When 16 spheres are packed, the box is filled with preservative liquid. Find the volume of this liquid. Round your answer to the nearest integer.



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. Meena went to a bank to withdraw ₹2000. She asked the cashier to give her ₹50 and ₹100 notes only. Meena got 25 notes in all. Find how many notes of ₹50 and ₹100 she received.

SECTION E

(3 questions × 4 marks = 12 marks)

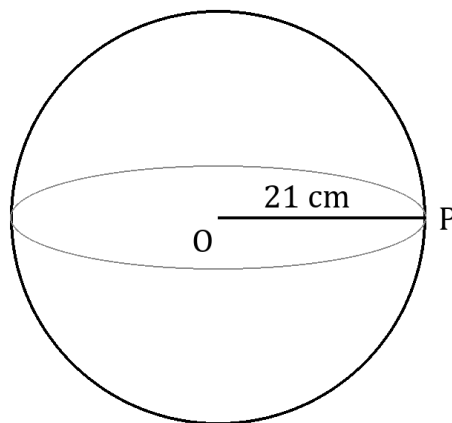
36. Tiwari Academy organises a reading challenge. A student reads 21 pages on the first day and 4 more pages on each successive day. Assume the pattern continues for at least ten days.

- (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 .

37. A spherical model of radius 21 cm is made for an exhibition. In figure, O is its centre and P lies on its surface. Give answers in terms of π .

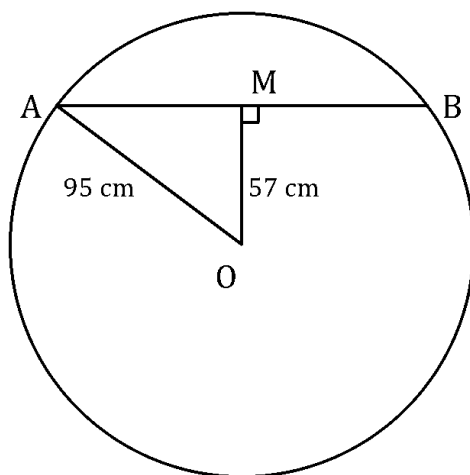


- (i) Find OP.
- (ii) Find the diameter.
- (iii) (A) Find its surface area and volume.

OR

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

38. A circular window has centre O and radius 95 cm. A straight decorative strip AB is a chord. The perpendicular OM from O to AB measures 57 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.