

CLASS IX — MATHEMATICS

MOCK PAPER (2026-27 SESSION)

Ganita Manjari · Based on the CBSE 2026-27 course structure

Time allowed: 3 hours

Maximum marks: 80

General Instructions

1. This question paper has five sections, A, B, C, D and E. All questions are compulsory. However, there is an internal choice in Questions 21 and 23 (Section B), Questions 26 and 29 (Section C), Questions 32 and 34 (Section D), and in part (iii) of each case study in Section E (Questions 36, 37 and 38). In these, attempt only one of the two alternatives, (A) or (B).
2. Section A has 20 questions of 1 mark each: Questions 1 to 18 are multiple-choice questions and Questions 19 and 20 are Assertion–Reason questions.
3. Section B has 5 very short answer questions of 2 marks each.
4. Section C has 6 short answer questions of 3 marks each.
5. Section D has 4 long answer questions of 5 marks each.
6. Section E has 3 case-based questions of 4 marks each.
7. Marks are shown in square brackets. Show the steps of your working; marks are awarded for method as well as for the answer.
8. Take $\pi = 22/7$ wherever it is needed, unless another value is stated. Use of a calculator is not permitted.

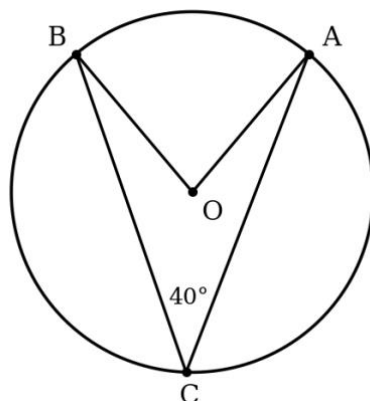
SECTION A

Questions 1 to 20 carry 1 mark each.

In Questions 19 and 20, a statement of Assertion (A) is followed by a statement of Reason (R). 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.

1. Which of the following has a terminating decimal expansion? [1]
(a) $7/12$ (b) $9/40$
(c) $5/21$ (d) $11/30$
2. A fair die is rolled once. The probability of getting a number greater than 4 is [1]
(a) $1/6$ (b) $1/4$
(c) $1/3$ (d) $1/2$
3. The curved surface area of a cylinder of radius 7 cm and height 10 cm is (take $\pi = 22/7$) [1]
(a) 154 cm^2 (b) 220 cm^2
(c) 440 cm^2 (d) 1540 cm^2
4. If $p(x) = 3x - 7$, then the value of $p(-2)$ is [1]
(a) -13 (b) -1
(c) 1 (d) 13

5. In the figure, O is the centre of the circle and $\angle ACB = 40^\circ$. The measure of $\angle AOB$ is [1]



- (a) 20° (b) 40°
(c) 60° (d) 80°
6. The area of a triangle with sides 9 cm, 10 cm and 17 cm is [1]
(a) 36 cm^2 (b) 45 cm^2
(c) 72 cm^2 (d) 90 cm^2
7. The diagonals of a quadrilateral ABCD bisect each other. If $\angle A = 70^\circ$, then $\angle B$ is [1]
(a) 70° (b) 90°
(c) 100° (d) 110°
8. The n th term of the sequence 5, 8, 11, 14, ... is [1]
(a) $2n + 3$ (b) $3n - 2$
(c) $3n + 2$ (d) $3n + 5$
9. The distance of the point P(-6, 8) from the origin is [1]
(a) 6 units (b) 8 units
(c) 10 units (d) 14 units
10. If the radius of a sphere is doubled, its surface area becomes [1]
(a) 2 times (b) 4 times
(c) 6 times (d) 8 times
11. If $x + 1/x = 5$, then $x^2 + 1/x^2$ is equal to [1]
(a) 23 (b) 25
(c) 27 (d) 29
12. A bag contains 3 red, 5 blue and 2 green balls. One ball is drawn at random. The probability that it is not blue is [1]
(a) $1/5$ (b) $3/10$
(c) $2/5$ (d) $1/2$
13. ABCD is a cyclic quadrilateral in which $\angle A = 75^\circ$. Then $\angle C$ is equal to [1]
(a) 75° (b) 105°
(c) 115° (d) 125°
14. In a class, 10 students have an average mark of 70 and 30 students have an average mark of 50. The average mark of all 40 students is [1]
(a) 45 (b) 55
(c) 60 (d) 65

15. The length of the arc of a circle of radius 21 cm that subtends an angle of 60° at the centre is (take $\pi = 22/7$) [1]
 (a) 22 cm (b) 33 cm
 (c) 44 cm (d) 66 cm
16. The common ratio of the geometric progression 81, 27, 9, 3, ... is [1]
 (a) 3 (b) -3
 (c) $1/9$ (d) $1/3$
17. In $\triangle ABC$, D and E are the midpoints of AB and AC respectively. If BC = 14 cm, then DE is [1]
 (a) 3.5 cm (b) 7 cm
 (c) 14 cm (d) 28 cm
18. The total surface area of a cube is 150 cm^2 . Its volume is [1]
 (a) 27 cm^3 (b) 64 cm^3
 (c) 125 cm^3 (d) 216 cm^3
19. Assertion (A): The decimal $0.333\ldots$ (with 3 repeating forever) is a rational number. [1]
 Reason (R): Every decimal that does not terminate is an irrational number.
 (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.
20. Assertion (A): The converse of the statement "If a number is divisible by 4, then it is even" is false. [1]
 Reason (R): The number 6 is even but it is not divisible by 4.
 (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.

SECTION B

Questions 21 to 25 carry 2 marks each. Questions 21 and 23 have an internal choice.

21. (A) Express $0.2727\ldots$ (the block 27 repeats forever) in the form p/q , where p and q are integers and $q \neq 0$.
 OR
 (B) Find two rational numbers between $2/9$ and $4/9$. [2]
22. Write the converse of the statement "If two angles are vertically opposite, then they are equal." Is the converse true? Give a reason. [2]
23. (A) The 3rd term of an arithmetic progression is 11 and its 7th term is 27. Find the first term and the common difference.
 OR
 (B) The first term of a geometric progression is 5 and its third term is 45. Find the common ratio (take it to be positive) and the fourth term. [2]
24. Without solving, decide whether the pair of equations $2x + 3y = 7$ and $6x + 9y = 20$ has a unique solution, no solution or infinitely many solutions. Give a reason. [2]
25. Give a counterexample to show that the statement "The sum of two irrational numbers is always irrational" is false. [2]

SECTION C

Questions 26 to 31 carry 3 marks each. Questions 26 and 29 have an internal choice.

26. (A) Show that the points A(1, 2), B(4, 6) and C(-4, 12) are the vertices of a right-angled triangle. Also find the coordinates of the midpoint of the hypotenuse.

OR

- (B) Show that the points A(-2, 3), B(1, 0) and C(4, -3) lie on a straight line. Also find the coordinates of the midpoint of AC. [3]

27. A taxi charges a fixed fare of ₹40 plus ₹12 for every kilometre.

- (i) Write a linear polynomial for the fare, in rupees, for d km. [1]
(ii) Find the fare for a ride of 9 km. [1]
(iii) For how many kilometres is the fare ₹136? [1]

28. Prove that $\sqrt{7}$ is irrational. [3]

29. (A) A chord AB of a circle is 16 cm long and its distance from the centre O of the circle is 6 cm. Find the radius of the circle.

OR

- (B) Find the length of a chord which is at a distance of 12 cm from the centre of a circle of radius 13 cm. [3]

30. A spinner has 8 equal sectors numbered 1 to 8. It is spun once. Find the probability that the pointer stops at

- (i) an even number, [1]
(ii) a prime number, [1]
(iii) a number greater than 5. [1]

31. ABCD is a parallelogram. The bisectors of $\angle A$ and $\angle B$ meet at P. Prove that $\angle APB = 90^\circ$. [3]

SECTION D

Questions 32 to 35 carry 5 marks each. Questions 32 and 34 have an internal choice.

32. (A) Answer both parts.

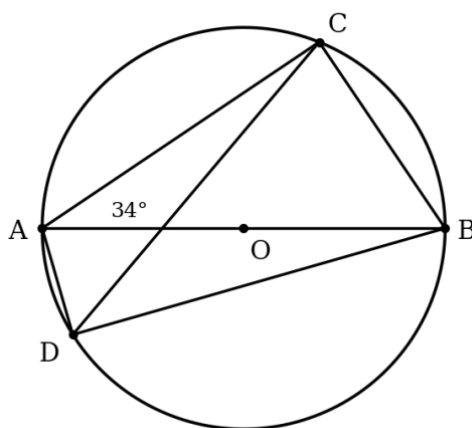
- (a) Factorise $16x^2 + 40x + 25$. [2]
(b) If $x + y = 7$ and $xy = 10$, find the value of $x^3 + y^3$. [3]

OR

- (B) Answer both parts.

- (a) Factorise $25p^2 - 20p + 4$. [2]
(b) If $a - b = 3$ and $ab = 10$, find the value of $a^3 - b^3$. [3]

33. In the figure, AB is a diameter of the circle with centre O. C and D are points on the circle on opposite sides of AB, and $\angle CAB = 34^\circ$. Find, with reasons,



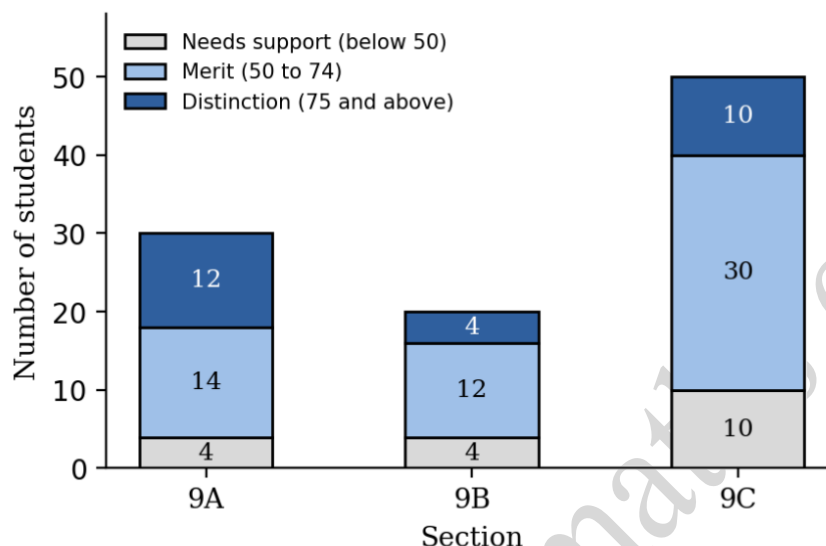
- (i) $\angle ACB$ [1]
 (ii) $\angle ABC$ [1]
 (iii) $\angle ADC$ [1]
 (iv) $\angle CDB$, and hence verify that $\angle ADB = 90^\circ$. [2]
34. (A) A triangular plot has sides 17 m, 25 m and 26 m.
 (i) Find its area using Heron's formula. [2]
 (ii) Find the length of the perpendicular from the opposite vertex to the side of 17 m. [1]
 (iii) A circular flower bed of radius 3.5 m is made inside the plot and the rest is covered with grass. Find the area covered with grass and the cost of the grass at ₹20 per m^2 . (Take $\pi = 22/7$.) [2]
- OR**
- (B) A triangular plot has sides 13 m, 20 m and 21 m.
 (i) Find its area using Heron's formula. [2]
 (ii) Find the length of the perpendicular from the opposite vertex to the side of 21 m. [1]
 (iii) A circular pond of radius 3.5 m is dug inside the plot and the rest is turfed. Find the area to be turfed and the cost of turfing at ₹30 per m^2 . (Take $\pi = 22/7$.) [2]
35. In $\triangle ABC$, D, E and F are the midpoints of the sides BC, CA and AB respectively.
 (i) Prove that AFDE is a parallelogram. [2]
 (ii) If $AB = AC$, prove that AFDE is a rhombus. [1]
 (iii) If, in addition, $\angle A = 90^\circ$, what kind of quadrilateral is AFDE? Justify your answer. [2]

SECTION E

Questions 36 to 38 are case-based questions carrying 4 marks each. Part (iii) of each has an internal choice.

36. Case Study 1

A school compares its three Class IX sections, 9A, 9B and 9C, in a unit test. The stacked bar chart shows how many students of each section scored in each band. The average marks of the sections were: 9A — 72, 9B — 60, 9C — 66.



- (i) How many students are there in section 9C? [1]
- (ii) What percentage of the students of section 9A are in the Distinction band? [1]
- (iii) (A) Find the average mark of all the students of the three sections taken together. Explain why $(72 + 60 + 66) \div 3$ does not give the correct overall average.

OR

- (B) Which section has the highest percentage of students in the Distinction band? Show your working. Would a 100% stacked bar chart help to compare the sections on this? Give a reason. [2]

37. Case Study 2

Two cab services operate in a town. Swift charges a fixed ₹30 plus ₹12 per km. Rapid charges a fixed ₹10 plus ₹14 per km. Let y be the fare in rupees for a ride of x km.

- (i) Write the fare of each service as a linear equation in x and y , and express each in the form $ax + by + c = 0$. [1]
- (ii) Which service is cheaper for a 6 km ride, and by how much? [1]
- (iii) (A) For what distance are the two fares equal? Which service is cheaper for rides longer than this distance? Give a reason.

OR

- (B) A third service, Zippy, charges a fixed ₹15 plus ₹13 per km. For what distance is Zippy's fare equal to Swift's fare? Which of the two is cheaper for a 5 km ride? Give a reason. [2]

38. Case Study 3

An ice-cream stall serves ice cream in a cone of radius 3.5 cm and height 12 cm. The cone is filled to the brim and a hemispherical scoop of the same radius is placed on top. (Take $\pi = 22/7$.)

- (i) Find the slant height of the cone. [1]
- (ii) Find the volume of ice cream that fills the cone. [1]

- (iii) (A) The curved surface of the cone and the curved surface of the scoop are to be covered by a wrapper. Find the total area of the wrapper needed.

OR

(B) A cylindrical tub of radius 7 cm and height 10 cm is full of ice cream. The stall owner says it can fill 12 cones like the one in part (ii), each filled to the brim. Is the owner correct? Justify your answer.

[2]

— End of Question Paper —

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