

No. of printed sheets: 6

Roll No.....

FAS, DELHI / CLASS IX / MATH (041) / SAMPLE PAPER (2026-27)

Time Allowed: 3Hrs.

Max Marks:80

General Instructions:

1. This Question Paper has 5 Sections A, B, C, D and E.
 2. Section A has 20 MCQs carrying 1 mark each
 3. Section B has 5 questions carrying 02 marks each.
 4. Section C has 6 questions carrying 03 marks each.
 5. Section D has 4 questions carrying 05 marks each.
 6. Section E has 3 case based integrated units of assessment (04 marks each) with sub-parts of the values of 1, 1 and 2 marks each respectively.
 7. All Questions are compulsory. However, an internal choice in 2 Qs of 5 marks, 2 Qs of 3 marks and 2 Questions of 2 marks has been provided. An internal choice has been provided in the 2marks questions of Section E.
 8. Draw neat figures wherever required. Take $\pi = 22/7$ wherever required if not stated.
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Section A (20 x 1 = 20 marks)

1. The point P(-4, 0) lies on the:
a. x-axis b. y-axis c. origin d. line $y = x$
2. A point has coordinates (0, -7). Its distance from the x-axis is:
a. 0 units b. 7 units c. -7 units d. 14 units
3. Choose a rational number that does not lie between $2/5$ and $3/4$:
a. $17/20$ b. $13/20$ c. $11/20$ d. $9/20$
4. If the side of an equilateral triangle is $2a$, then its area is:
a. $\sqrt{3}a^2$ b. $2\sqrt{3}a^2$ c. $3\sqrt{3}a^2$ d. $4\sqrt{3}a^2$
5. Which number is irrational?
a. $\sqrt{49}$ b. 0.125 c. $\sqrt{18}$ d. $22/7$
6. If the circumferences of two circles are in the ratio 4 : 5, then their areas are in the ratio:
a. 16 : 25 b. 25 : 16 c. 2 : $\sqrt{5}$ d. 4 : 5

7. If the sides of a triangle are doubled, then its area becomes:
 (a) 2 times (b) 3 times (c) 4 times (d) 8 times
8. A fair die is thrown once. The probability of getting a number greater than 4 is:
 a. $\frac{1}{6}$ b. $\frac{1}{3}$ c. $\frac{1}{2}$ d. $\frac{2}{3}$
9. If the terms of an AP are 7, 11, 15, ..., its 10th term is:
 a. 39 b. 43 c. 47 d. 51
10. If $x = 2p + 1$ and $y = p - 1$ is the solution of the linear equation $2x - 3y + 5 = 0$, then the value of p is:
 a. 2 b. -2 c. -3 d. none of these
11. The midpoint of the line segment joining the points A(-2, 5) and B(6, -1) is:
 a. (2, 2) b. (4, 4) c. (-4, 6) d. (2, -2)
12. If one factor of $x^2 - 9$ is $x - 3$, the other factor is:
 a. $x - 3$ b. $x + 3$ c. $x + 9$ d. $x - 9$
13. The expression $(a + b)^2 - (a - b)^2$ simplifies to:
 a. $2a^2 + 2b^2$ b. $4ab$ c. $2ab$ d. $4a^2 b^2$
14. A bag contains 3 red and 2 blue balls. One ball is drawn at random. Probability of a blue ball is:
 a. $\frac{2}{3}$ b. $\frac{3}{5}$ c. $\frac{2}{5}$ d. $\frac{1}{2}$
15. The common difference of the AP whose n th term is given by $a_n = 5n - 7$ is:
 (a) -7 (b) 7 (c) 5 (d) -2
16. If $(x-2y) + (2y-3z) + (3z-x) = 0$, find the sum of cubes.
 a) 0 b) $3(x-2y)(2y-3z)(3z-x)$ c) $x^3 - 8y^3 - 27z^3$ d) $(x-2y)(2y-3z)(3z-x)$
17. The values $x = 5$ and $y = 2$ are the solutions of the linear equation:
 a. $x + 2y = 7$ b. $5x + 2y = 7$ c. $x + y = 7$ d. $5x + y = 7$
18. A student says that the probability of an event can be 1.2 because probabilities are numbers. Which statement is correct?
 a. Always true b. True only for impossible events
 c. False because probability lies between 0 and 1
 d. False because probability is always a whole number

Assertion-Reason Based Questions:

Direction: In question numbers 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.

19. **Assertion (A):** The decimal expansion of $21/48$ is 0.4375.

Reason (R): All decimal numbers that are terminating or non-terminating repeating decimals are rational numbers.

20. **Assertion (A):** Degree of a polynomial $(ax + b)(cx + d)$ is 2.

Reason (R): Product of any two polynomials is always a quadratic polynomial.

Section B (2 x 5 = 10 marks)

21.(A) In a GP, the first term is 3 and the common ratio is 2. Find the 5th term.

OR

21(B) The sum of the first n natural numbers is 105. Find the value of n .

22. If $P(a, 4)$ is the midpoint of the line segment joining the points $A(-6, 5)$ and $B(-2, 3)$, then find the value of a .

23. A box contains cards numbered 1 to 20. One card is selected at random. Find the probability of selecting a multiple of 3.

24. A shop models the cost of x notebooks by $p(x) = 35x + 120$. What is the degree of the polynomial? Also, find the cost of 8 notebooks.

25. (A) A staircase pattern adds 3 blocks at each new step. Step 1 has 5 blocks. Write $T(n)$ for the number of blocks at Step (n). How many blocks are at Step 15?

OR

25(B) One number is 4 more than twice another. Their sum is 52. Frame a linear equation and find both numbers.

Section C (3 x 6 = 18 marks)

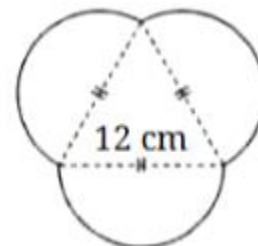
26. A staircase has 4 tiles in the first row, 7 in the second, 10 in the third, and so on. Find the number of tiles in the 15th row. What is the total number of tiles in 10th and 15th row?

27. Prove that $(a + b + c)^2 - (a^2 + b^2 + c^2) = 2(ab + bc + ca)$. Hence, find the value of $(ab + bc + ca)$ when $a + b + c = 0$ and $(a^2 + b^2 + c^2) = 18$.

28. If $9x^2 + 25y^2 = 181$ and $xy = -6$, find the value of $3x + 5y$.

29. A wheel rotates 25,000 times to cover a total distance of 88 km. Calculate the radius of the wheel in centimetres.

30.(A) Find the perimeter of the shape (taking the arcs to be half of a circle):



OR

30.(B) The sides of a triangular plot are in the ratio 3 : 5 : 7; its perimeter is 300 m. Find its area.

31. (A) Construct $\sqrt{10}$ on a number line.

OR

31.(B) Prove that $\sqrt{7}$ is irrational.

Section D (5 x 4 = 20 marks)

32. A sequence has a first term of 81 and each term is one-third of the previous term. Another sequence is 81, 54, 27, 0, ... Identify which sequence is a GP and which is an AP. Justify your answer. Also, find the sum of the first 10 terms of the AP.

OR

A ball is dropped from a height of 100 m. Each time it hits the ground, it rebounds to $\frac{1}{2}$ of its previous height. Write the sequence of heights reached after the 1st, 2nd, and 3rd bounces. Also, find the height reached after the 6th bounce.

33.(a) If $(3x - 4)(5x + 7) = 15x^2 - kx - 28$, then find the value of 'k'. (2)

(b) Factorise: $y^2 - \sqrt{3}y - 6$ (3)

34(A). Draw the graphs of the following set of lines on the same graph sheet: $y = 5x$ and $y = -2x$. Mention the slope and y-intercept of both the lines.

OR

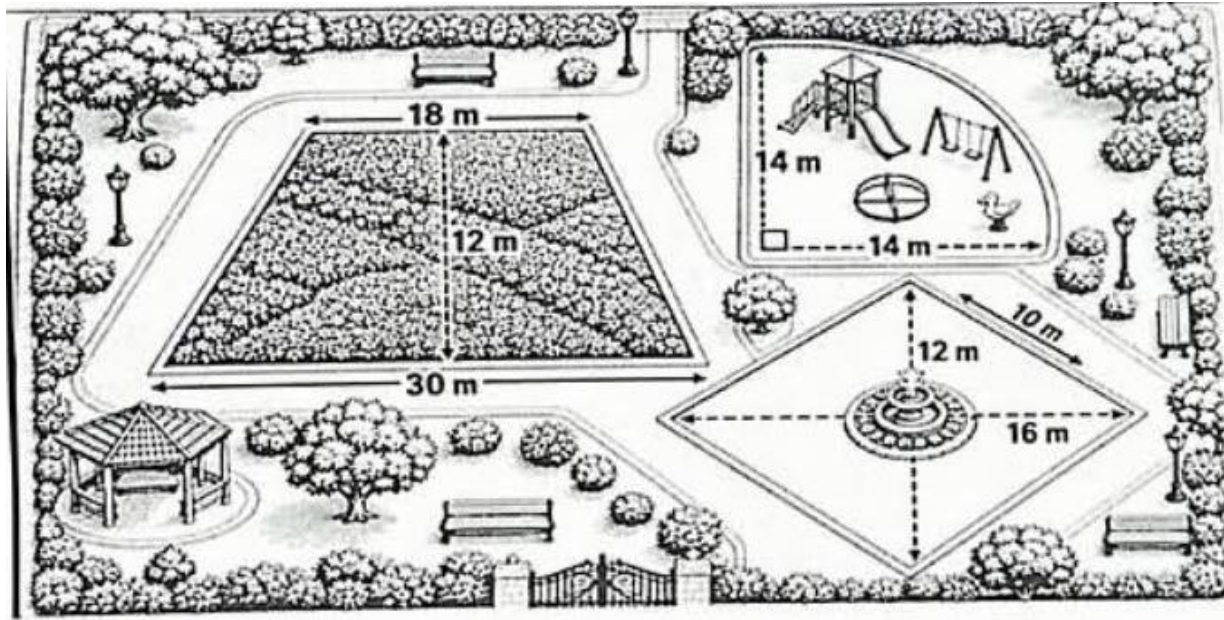
34 (B). Draw the graphs of the following set of lines on the same coordinate plane: $y = 3x - 1$, $y = 3x$, and $y = 3x + 1$. What do you observe about these lines?

35. (a) Express $0.6 + 0.\bar{7} + 0.4\bar{7}$ in the form $\frac{p}{q}$ where p and q are integers and $q \neq 0$. (3)

(b) Evaluate: $-\frac{5}{7} - \frac{3}{5} - \frac{7}{10}$

Section E (3 x 4 = 12 marks)

36. The Municipal Corporation plans to develop a community park on a piece of land to provide a recreational space for the residents. The park is divided into three sections:



1. A trapezium-shaped flower garden where colourful flowers will be planted with parallel sides 30m and 18m and height 12m.
2. A rhombus-shaped lawn with a fountain at its centre with side 10m and the diagonals 16m and 12m.
3. A sector-shaped children's play area equipped with swings and slides with radius 14m and central angle 90 degrees.

Based on the above information, answer the following questions:

- a) Find the area of the trapezium-shaped flower garden. (1 Mark)
- b) Find the area of the rhombus-shaped lawn. (1 Mark)
- c) (i) Find the area of the sector-shaped children's play area. (2 Marks)

OR

- (ii) Find the length of the curved arc forming the boundary of the children's play area. (2 Marks)

37. At a school festival, a box contains 30 tokens numbered 1 to 30. A participant draws one token at random. The reward depends on the number drawn: multiples of 5 win a small prize, prime numbers win a medium prize, and numbers that are both prime and greater than 20 win a special prize.

Based on the above information, answer the following questions:

- a) Find the probability of drawing a multiple of 5. (1 Mark)
- b) Find the probability of drawing a prime number. (1 Mark)
- c) (i) Find the probability of winning a prize. (2 Marks)

OR

- (ii) Find the probability of not winning any prize. (2 Marks)

38. During an inter-school Math Olympiad, a team is faced with a cryptography puzzle to unlock a digital vault. The vault requires a numerical passcode. The clue on the screen reads: To find the passcode, you must evaluate the expression $2x^2 + 11x + 12$.

Based on the above information, answer the following questions:

- a) Factorise the given expression. (1 Mark)
- b) Calculate the passcode code value when $x = -3$. (1 Mark)
- c) (i) Factorise $49x^2 - 28x + 4$ using an appropriate algebraic identity. (2 Marks)

OR

- (ii) Using a suitable algebraic identity, simplify $(7x + 4)^2 - (7x - 4)^2$. (2 Marks)