

# 8th Class Mathematics

## Domain 2: Algebra

### Important MCQs with Explanation

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#### Sub-domain 1: Number Sequences and Patterns

1. What is the next term in the sequence: 2, 4, 8, 16, \_\_\_?

A) 20   B) 24   C) **32**   D) 30

✓ **Correct Answer: C) 32**

□ **Explanation:** Har term ko 2 se multiply kiya gaya hai  $\rightarrow 16 \times 2 = 32$

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2. The 5th term in the sequence 3, 6, 9, 12, \_\_\_ is:

A) 15   B) 18   C) **21**   D) 24

✓ **Correct Answer: C) 21**

□ **Explanation:** Har term mein +3 ho raha hai  $\rightarrow 12 + 3 = 15$  (lekin 5th term:  $3 + 4 \times 3 = 15$ )

⊗ **Correction:** Answer should be A) 15, not 21.

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3. Which sequence is arithmetic?

A) 2, 4, 8, 16   B) **3, 6, 9, 12**   C) 5, 25, 125   D) 10, 100, 1000

✓ **Correct Answer: B)**

□ **Explanation:** Arithmetic sequence mein har term ka difference same hota hai  $\rightarrow$  Yahan +3

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4. Common difference in the sequence 7, 10, 13, 16 is:

A) 2   B) **3**   C) 4   D) 5

✓ **Correct Answer: B) 3**

□ **Explanation:**  $10 - 7 = 3$ ,  $13 - 10 = 3 \rightarrow$  Common difference = 3

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5. What is the formula for the nth term of the sequence: 2, 4, 6, 8...?

A)  $2n$  B)  $n + 2$  C)  $n \times 2$  D) All of these

✓ **Correct Answer: D) All of these**

□ **Explanation:** 2, 4, 6, 8... ka nth term  $2n$  hai  $\rightarrow 2 \times 1 = 2, 2 \times 2 = 4$ , etc.  $n \times 2$  bhi same hai.

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6. The pattern rule for the sequence 1, 4, 9, 16, 25 is:

A) Multiply by 2 B) **Square of natural numbers** C) Add 2 D) None

✓ **Correct Answer: B)**

□ **Explanation:**  $1^2 = 1, 2^2 = 4, 3^2 = 9 \dots \rightarrow$  Ye squares hain

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7. 10th term of the arithmetic sequence 2, 5, 8,... is:

A) 30 B) **29** C) 28 D) 31

✓ **Correct Answer: B) 29**

□ **Explanation:** nth term =  $a + (n - 1)d \rightarrow 2 + (10 - 1) \times 3 = 2 + 27 = 29$

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8. In a geometric sequence, each term is obtained by:

A) Addition B) **Multiplication** C) Subtraction D) Division

✓ **Correct Answer: B)**

□ **Explanation:** Geometric sequence mein har term previous term se multiply hoti hai

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9. If nth term =  $3n + 2$ , then 5th term is:

A) 15 B) **17** C) 12 D) 18

✓ **Correct Answer: B) 17**

□ **Explanation:**  $3 \times 5 + 2 = 15 + 2 = 17$

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10. Which of the following is NOT a pattern?

A) 2, 4, 8, 16 B) **3, 5, 10, 17** C) 1, 1, 2, 3, 5, 8 D) 2, 4, 6, 9

✓ **Correct Answer: B)**

☐ **Explanation:** Is sequence ka koi clear rule follow nahi ho raha — no arithmetic or geometric pattern

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**11. If first term = 4 and common ratio = 2, find the 3rd term:**

A) 8   B) 10   C) **16**   D) 20

✓ **Correct Answer: C) 16**

☐ **Explanation:** Geometric: 4, 8, 16 → 3rd term =  $4 \times 2 \times 2 = 16$

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**12. Fibonacci sequence starts from:**

A) **0, 1**   B) 1, 1   C) 2, 3   D) 5, 8

✓ **Correct Answer: A)**

☐ **Explanation:** Standard Fibonacci starts from 0, 1 → Next terms: 1, 2, 3, 5, 8...

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## Sub-domain 2: Expansion and Factorisation

**13. The expanded form of  $(a + b)^2$  is:**

A)  $a^2 + b^2$    B)  $a^2 + 2ab + b^2$    C)  $a^2 - 2ab + b^2$    D) None

✓ **Correct Answer: B)**

☐ **Explanation:** Identity:  $(a + b)^2 = a^2 + 2ab + b^2$  → Standard expansion formula.

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**14.  $(x + 3)(x - 3) = ?$**

A)  **$x^2 - 9$**    B)  $x^2 + 9$    C)  $x^2 - 6x + 9$    D)  $x^2 + 6x + 9$

✓ **Correct Answer: A)**

☐ **Explanation:** Identity:  $(a + b)(a - b) = a^2 - b^2$  →  $x^2 - 3^2 = x^2 - 9$

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**15.  $(2x + 1)^2 = ?$**

A)  $4x^2 + 1$    B)  **$4x^2 + 4x + 1$**    C)  $4x^2 + 2x + 1$    D) None

✓ **Correct Answer: B)**

☐ **Explanation:**  $(2x + 1)^2 = (2x)^2 + 2 \times 2x \times 1 + 1^2 = 4x^2 + 4x + 1$

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16. Factor of  $x^2 - 9$  is:

A)  $(x - 3)(x + 3)$  B)  $(x - 9)(x + 1)$  C)  $(x - 1)(x + 9)$  D) None

✓ **Correct Answer: A)**

□ **Explanation:**  $x^2 - 9 = x^2 - 3^2 \rightarrow$  Difference of squares identity

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17. What is the result of  $(x + 5)^2$ ?

A)  $x^2 + 10x + 25$  B)  $x^2 + 25$  C)  $x^2 + 5x + 25$  D) None

✓ **Correct Answer: A)**

□ **Explanation:** Identity:  $(a + b)^2 = a^2 + 2ab + b^2 \rightarrow x^2 + 2 \times 5x + 25 = x^2 + 10x + 25$

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18. Factor of  $x^2 + 5x + 6$  is:

A)  $(x + 2)(x + 3)$  B)  $(x - 2)(x + 3)$  C)  $(x + 1)(x + 6)$  D)  $(x + 2)(x - 3)$

✓ **Correct Answer: A)**

□ **Explanation:**  $2 \times 3 = 6$  and  $2 + 3 = 5 \rightarrow$  Factors are  $x + 2$  and  $x + 3$

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19.  $(a + b)(a - b) = ?$

A)  $a^2 - b^2$  B)  $a^2 + 2ab + b^2$  C)  $a^2 + b^2$  D) None

✓ **Correct Answer: A)**

□ **Explanation:** Difference of squares identity  $\rightarrow a^2 - b^2$

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20. Which is a perfect square trinomial?

A)  $x^2 + 4x + 4$  B)  $x^2 + 5x + 6$  C)  $x^2 - 9$  D) None

✓ **Correct Answer: A)**

□ **Explanation:**  $x^2 + 4x + 4 = (x + 2)^2 \rightarrow$  Perfect square trinomial

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21. Which is factor of  $x^2 + 3x - 10$ ?

A)  $(x - 5)(x + 2)$  B)  $(x + 5)(x - 2)$  C)  $(x + 3)(x + 3)$  D) None

✓ **Correct Answer: B)**

□ **Explanation:**  $+5$  and  $-2$  multiply to  $-10$ , add to  $+3 \rightarrow (x + 5)(x - 2)$

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22. Expansion of  $(x - 2)(x - 3)$ :

A)  $x^2 + 5x + 6$    B)  $x^2 - 5x + 6$    C)  $x^2 - x - 6$    D)  $x^2 + x - 6$

✓ **Correct Answer: B)**

□ **Explanation:**  $x^2 - 3x - 2x + 6 = x^2 - 5x + 6$

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23. Factor of  $x^2 - 16$ :

A)  $(x + 4)^2$    B)  $(x - 4)(x + 4)$    C)  $(x + 8)(x - 2)$    D) None

✓ **Correct Answer: B)**

□ **Explanation:**  $x^2 - 16 = x^2 - 4^2 \rightarrow$  Difference of squares

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24. What is  $(a - b)^2$ ?

A)  $a^2 - b^2$    B)  $a^2 - 2ab + b^2$    C)  $a^2 + 2ab + b^2$    D)  $a^2 + b^2$

✓ **Correct Answer: B)**

□ **Explanation:** Identity:  $(a - b)^2 = a^2 - 2ab + b^2$

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### Sub-domain 3: Linear Equations and Inequalities

27. Solve:  $x + 5 = 10$

A) **5**   B) 10   C) 15   D) 0

✓ **Correct Answer: A) 5**

□ **Explanation:** Subtract 5 from both sides:  $x = 10 - 5 = 5$

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28. Solve:  $2x = 8$

A) 2   B) **4**   C) 6   D) 8

✓ **Correct Answer: B) 4**

□ **Explanation:** Divide both sides by 2:  $x = 8 \div 2 = 4$

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29.  $x - 3 = 7$ , then  $x = ?$

A) 5   B) 7   C) **10**   D) 12

✓ **Correct Answer: C) 10**

□ **Explanation:** Add 3 to both sides:  $x = 7 + 3 = 10$

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30.  $x \div 2 = 6$ , then  $x = ?$

A) 8   B) **12**   C) 3   D) 6

✓ **Correct Answer: B) 12**

□ **Explanation:** Multiply both sides by 2:  $x = 6 \times 2 = 12$

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31. Which of the following is a linear equation?

A)  $x^2 + 2 = 5$    B)  $x + 2 = 5$    C)  $2x^2 = 9$    D)  $x^3 = 27$

✓ **Correct Answer: B)**

□ **Explanation:** Linear equations have **no exponents** higher than 1  $\rightarrow$  only  $x$

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32.  $3x - 4 = 5 \rightarrow x = ?$

A) 1   B) **3**   C) 5   D) 6

✓ **Correct Answer: B) 3**

□ **Explanation:**

Add 4:  $3x = 9$

Divide by 3:  $x = 3$

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33.  $5x = 2x + 9 \rightarrow x = ?$

A) 2   B) **3**   C) 5   D) 6

✓ **Correct Answer: B) 3**

□ **Explanation:**

$5x - 2x = 9 \rightarrow 3x = 9 \rightarrow x = 3$

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34. Inequality symbol for "greater than or equal to":

A)  $<$  B)  $>$  C)  $\geq$  D)  $\leq$

✓ **Correct Answer: C)**

□ **Explanation:** The symbol  $\geq$  means "greater than or equal to"

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35. Which of these is NOT a solution of  $x < 5$ ?

A) 1 B) 3 C) 6 D) 0

✓ **Correct Answer: C) 6**

□ **Explanation:**  $x < 5$  means values **less than 5** — 6 is not valid

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36. Solve:  $2x - 1 = 7$

A) 3 B) 4 C) 5 D) 6

✓ **Correct Answer: C) 5**

□ **Explanation:**

$$2x = 7 + 1 = 8 \rightarrow x = 8 \div 2 = 5$$

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37. Linear equation with variable on both sides:

A)  $x = 2$  B)  $2x + 3 = x + 5$  C)  $x + 1 = 5$  D)  $2x = 4$

✓ **Correct Answer: B)**

□ **Explanation:** Variable on both sides (x on LHS and RHS)

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38. What is the solution of:  $4x + 2 = 14$

A) 2 B) 3 C) 4 D) 5

✓ **Correct Answer: B) 3**

□ **Explanation:**

$$4x = 14 - 2 = 12 \rightarrow x = 12 \div 4 = 3$$

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39. If  $3(x - 1) = 12$ ,  $x = ?$

A) 4 B) 5 C) 3 D) 6

✓ **Correct Answer: B) 5**

□ **Explanation:**

$$3(x - 1) = 12 \rightarrow x - 1 = 4 \rightarrow x = 5$$

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**40.  $x \div 4 + 3 = 5 \rightarrow x = ?$**

A) 6   B) **8**   C) 4   D) 2

✓ **Correct Answer: B) 8**

□ **Explanation:**

$$x/4 = 5 - 3 = 2 \rightarrow x = 2 \times 4 = \mathbf{8}$$