

Algebraic Expressions on the Number

A. Choose the correct answer:

1. Which point represents the value of $2x + 3$ when $x = 1$ on the number line?

- a) 4
- b) 5
- c) 6
- d) 7

2. If an expression $3x - 2$ is plotted on the number line and $x = 2$, the point will be at:

- a) 2
- b) 4
- c) 6
- d) 8

3. Which algebraic expression will give 0 on the number line when $x = -2$?

- a) $x + 2$
- b) $x - 2$
- c) $2x$
- d) $3x + 2$

4. The value of the expression $5(x - 2)$ when $x = 3$ will be plotted at:

- a) 5
- b) 15
- c) -5
- d) 0

5. If x is at position 4 on the number line, what is the value of $2x - 1$?

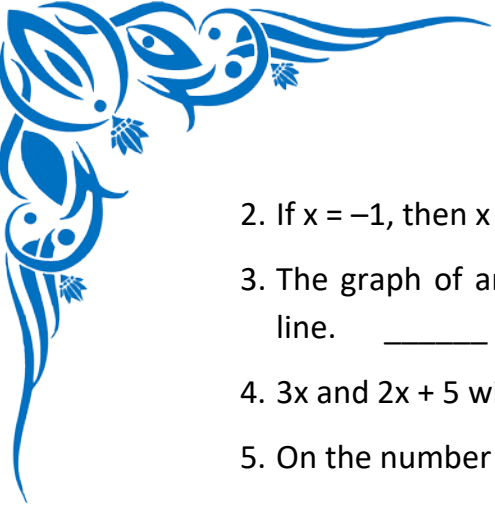
- a) 6
- b) 7
- c) 8
- d) 9

B. Write the Missing Terms to Complete the Sentences:

1. When $x = 0$, the value of the expression $3x + 5$ is _____.
2. An algebraic expression plotted on the number line shows _____ values for different inputs.
3. The value of $2x - 3$ when $x = -1$ is _____.
4. To move 2 steps to the right on the number line from $3x$, we add _____.
5. An expression like $x + 4$ represents a _____ on the number line.

C. Mark each sentence with a True (✓) or False (X):

1. The expression $2x + 3$ gives only positive values for all positive x . _____



2. If $x = -1$, then $x + 1$ will be at zero on the number line. _____
3. The graph of an algebraic expression is always a straight line on the number line. _____
4. $3x$ and $2x + 5$ will always have the same value at $x = 1$. _____
5. On the number line, moving to the left indicates increasing values. _____

D. Figure out the answers to these questions:

1. Find and plot the value of $2x + 1$ when $x = -3, 0,$ and 2 .
2. If the expression is $4x - 5$, find the value when $x = -2, 0,$ and 3 and explain how the points would appear on the number line.
3. Draw a rough number line and mark the points for the expression $\frac{x}{2} + 1$ where $x = 0, 2, 4$.
4. For which value of x will the expression $3x + 7$ give the point 1 on the number line?
5. If $5x - 4 = 6$, find the value of x and locate it on the number line.

E. Challenge yourself with these questions:

1. Calculate and plot the value of $3(x + 2)$ when $x = -2, 0,$ and 2 .
2. Write an expression that moves 5 steps left from the point represented by x .
3. Solve for x if $2x + 5 = 9$, and mark its value on the number line.
4. Draw a number line and show the values of $x - 3$ for $x = -2, 0, 4$.
5. If $4x + 1$ lies at point 9 on the number line, find x .