



SKILL 11: Evaluating Algebraic Expressions

Expressions such as $-3n$, $x + 2$, and $6 - \square$ that contain variables are called **algebraic expressions**. The value of an algebraic expression depends on the value of each variable in the expression. You can **evaluate** expressions after replacing each variable with a value. This is known as *substituting* a value for the variable. An expression with numbers but without variables is called a **numerical expression**.

Example 1

Evaluate $7d$ for $d = 3$.

Replace d with 3. The expression becomes $7 \cdot 3$. Multiply: $7 \cdot 3 = 21$.

So, when you evaluate $7d$ for $d = 3$, the result is 21.

Example 2

Evaluate $3 + 2x$, for $x = -1$.

Replace x with -1 . The expression becomes: $3 + 2(-1)$.

Use order of operations to simplify. Multiply first. $3 + (-2)$

Then add. 1

So, when you evaluate $3 + 2x$, for $x = -1$, the result is 1.

Guided Practice

Evaluate the expression by completing the steps.

1. Evaluate $18 - x$ for $x = 7$.

- Replace x with its value: $18 - \underline{\hspace{2cm}}$.
- Subtract: $18 - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$.
- So, when you evaluate $18 - x$ for $x = 7$, the result is $\underline{\hspace{2cm}}$.

2. Evaluate $3 + 4y$ for $y = -2$.

- Remember that $4y$ means $4 \cdot y$. Replace y with its value: $3 + 4 \cdot (\underline{\hspace{2cm}})$.
- Use order of operations to simplify. $3 + (\underline{\hspace{2cm}}) = \underline{\hspace{2cm}}$.
- So, when you evaluate $3 + 4y$ for $y = -2$, the result is $\underline{\hspace{2cm}}$.

SKILL 11: Practice

Evaluate each algebraic expression for the given value of the variable.

1. $12 + x$ for $x = 4$ _____
2. $20 - k$ for $k = 9$ _____
3. $24 \div n$ for $n = 8$ _____
4. $6t$ for $t = 2$ _____
5. $32 - m$ for $m = -3$ _____
6. $h + (-10)$ for $h = 2$ _____
7. $-3j$ for $j = 9$ _____
8. $p \div (-5)$ for $p = 35$ _____
9. $26 + 2x$ for $x = 7$ _____
10. $30 - 4y$ for $y = 8$ _____
11. $20c \div 10$ for $c = 3$ _____
12. $-3m$ for $m = -11$ _____
13. $6 - 3f$ for $f = 6$ _____
14. $2p - 14$ for $p = 13$ _____
15. $-4 + 8t$ for $t = -5$ _____
16. $100 \div j$ for $j = 5$ _____
17. $3k - 8k$ for $k = 16$ _____
18. $-3m + 15 - m$ for $m = 25$ _____
19. $64g \div 8$ for $g = -7$ _____
20. $200 + k \div 9$ for $k = 63$ _____
21. $2y + 8$ for $y = -3$ _____
22. $18 - 3m$ for $m = -1$ _____
23. $\frac{6}{2n}$ for $n = -3$ _____
24. $9z + 2z$ for $z = -2$ _____

Solve.

25. Mark drives $65t$ miles in t hours. How far does he drive in 2 hours?

26. Josefina spent $20 + 3b$ dollars on a pair of earrings and three blouses that cost b dollars each. How much did she spend in all if each blouse cost \$15?

TEST PREP

27. Evaluate $9 + x$ for $x = -3$.

A -27 C 6
B -12 D 12

Skill 11

28. Doug bought a book for d dollars and a poster for \$8. What expression represents how much he spent?

F $8 + d$ H $8d$
G $d - 8$ J $8 \div d$

Skill 10