

Evaluating Expressions

Vocabulary Terms

- * **Numerical expression**: a mathematical phrase with only numbers and operation symbols. Ex: $2^2 + 3 \div 3 \cdot 7$
- * **Variable**: a symbol that represents one or more numbers.
- * **Algebraic expressions**: a mathematical expression with one or more variables.
Ex: $2x^2 + 3x + 1$
- * **Coefficient**: a number multiplied by a variable or variables. $\underbrace{3xy}$ coefficient
- * **Constant**: a number that stands alone.

Evaluating Algebraic Expressions

Example:

$$\begin{aligned} 2x - 8 & \text{ for } x = 11 \\ 2(11) - 8 & \leftarrow \text{Replace } x \text{ with } 11. \\ \checkmark 22 - 8 & \leftarrow \text{Multiply } 2 \text{ and } 11 \\ = 14 & \leftarrow \text{Subtract } 8 \text{ from } 22 \end{aligned}$$

1. $5x \div 15$ for $x = 7$

$$\begin{aligned} 5(7) \div 15 & \rightarrow \frac{35}{15} \div 5 = \boxed{\frac{7}{3}} \\ 35 \div 15 & \end{aligned}$$

2. $2(x-3)$ for $x = -8$

$$2((-8)-3)$$

$$2(-11)$$

$$= \boxed{-22}$$

3. $5x - y$ for $x = 12, y = -14$

$$5(12) - (-14)$$

$$60 - (-14)$$

$$60 + 14$$

$$\boxed{74}$$

4. $\frac{8b+1}{7-2a}$ for $a = 2, b = 4$

$$7 - 2a$$

* fraction bar means to simplify numerator and denominator first

$$= \frac{8(4)+1}{7-2(2)} = \frac{32+1}{7-4} = \frac{33}{3} = \boxed{11}$$

$$7 - 2(2) \quad 7 - 4 \quad 3$$

↑
now

you can

divide

5. $5a + 3b - 2$ for $a = -1$ and $b = 3$

$$5(-1) + 3(3) - 2$$

$$-5 + 9 - 2$$

$$4 - 2$$

$$\boxed{2}$$

6. ab^2 for $a = -1$ and $b = 3$

$$(-1)(3)^2$$

$$(-1)(9) = \boxed{-9}$$