

Algebra 1-4: Variables in Expressions

Warm-Up

A = {Whole Numbers} $0, 1, 2, 3, \dots$

B = {Integers} $\dots -2, -1, 0, 1, 2, \dots$

1. Find $A \cap B$. $0, 1, 2, 3, \dots$ or whole numbers

2. Find $A \cup B$. $\dots -2, -1, 0, 1, 2, \dots$ or integers

Evaluate if $x = 5$.

3. $3x$ 15
 $3(5) = 15$

4. $-8x$ -40
 $-8(5) = -40$

5. $10 + x^2$ 35
 $10 + (5)^2 = 10 + 25 = 35$

Numerical Expression	Algebraic Expression
<p>Ex) $\frac{4+6}{2}$</p> <p>* Everything is numbers</p> <p>* No = Sign</p>	<p>Ex) $\frac{4a+2}{b}$</p> <p>* Letters/variables are in the problem</p> <p>* No = sign</p>

Order of Operations- Used to evaluate (do the problem) and simplify.

Please Excuse My Dear Aunt Sally

Parentheses

Exponents

Multiplication

Divide

Addition

Subtraction

Do in order from left to right

Correct

$6 \div 2 \cdot 8$
 $3 \cdot 8 = 24$

Not correct

$6 \div 2 \cdot 8$
 $6 \div 16$
 $\frac{6}{16} = \frac{3}{8}$

Example Problems

Is the expression numeric or algebraic?

1. a. $2a + b$

4

algebraic

b. $(3 + -5)^3$

8

numeric

c. $3(x + 8y)$

algebraic

Simplify.

2. $4 - 3^2 + 6 \cdot 2^3$

$4 - 9 + 6 \cdot 8$
 $4 - 9 + 48$
 $-5 + 48 = 43$

3. $2 + 5 \cdot 8 - 6 \cdot 5$

$2 + 40 - 30$
 $42 - 30 = 12$

Evaluate when $e = 5$, $f = 3$, and $g = 0$.

4. $4e$

$4(5)$
 20

5. $2(e+f)$

$2(5+3)$
 $2(8)$
 16

6. $g^2 + 22$

$0^2 + 22$
 $0 + 22$
 22

7. $e - fg$

$5 - 3 \cdot 0$
 $5 - 0$
 5

8. efg

$5 \cdot 3 \cdot 0$
 $15 \cdot 0$
 0