

Math 7 Notes  
(Section 5.1)  
Algebraic Expressions

3a

REMEMBER

There are many ways to show multiplication.

~~3 × 2~~    3(2)    3 • 2    (3)(2)    ab

Evaluate:

$2^3$ $2 \cdot 2 \cdot 2 = 8$	$3^2$ $3 \cdot 3 = 9$	$-5^2$ (25) $-5 \cdot 5$	$(-6)^2$ $(-6)(-6)$ 36
$(-4)^3$ $(-4)(-4)(-4)$ -64	$3(-10)^2$ $3(-10)(-10)$ 3(100) 300		

Remember how we evaluated numerical expressions

$(-4)(-4)$

$$-3(-6+2)^2$$

$$-3(-4)^2$$

$$-3(16)$$

$$-48$$

$$-6 + 10 \cdot 3$$

$$-6 + 30$$

$$24$$

$-2(-2)(-2)$

$\frac{51}{7}$

$$6(-2)^3 - 3 + 7$$

$$6(-8) + -3 + 7$$

$$-48 + -3 + 7$$

$$-51 + 7$$

$$-44$$

$$-28 \div (3 - 1)^2$$

$$-28 \div (2)^2$$

$$-28 \div 4$$

$$-7$$

Variables and Expressions

Numerical Expressions		Algebraic Expressions	
$3 + 7$	$8(3) - 2$	$x + y$	$2a - b$
$2^3 + 1$	$\frac{12}{6}$	$x - 6$	$5a$
		$-9xy$	$ab$
			$y^3$

To evaluate an algebraic expression for a given value:

- \*Copy problem
- \*Substitute numbers for variables
- \*Use the order of operations
- Show steps line by line
- \*Circle final answer

$-8 + 8$   
0

Evaluate if  $a = -3$   $b = 2$   $c = 5$

$$a + 4b - c$$

$$-3 + 4(2) - 5$$

$$-3 + 8 - 5$$

$$5 - 5$$

$$0$$

$$\frac{5ab}{c+1}$$

$$\frac{5(-3)(2)}{5+1}$$

$$\frac{-30}{6}$$

$$-5$$

$-30 \div 6$

Evaluate if  $a = -2$   $b = 4$   $c = -5$

$$2(a + c)$$

$$2(-2 + -5)$$

$$2(-7)$$

$$-14$$

$$3a^2 + bc$$

$$3(-2)^2 + (4)(-5)$$

$$3(4) + 4(-5)$$

$$12 + -20$$

$$-8$$

**A variable** is a symbol that represents an unknown quantity.

- \* It is important to **DEFINE** the variable you use so it is clear what it stands for
- For example:**

Let  $w$  = the number of weeks

Let  $x$  = the length of the rectangle (in feet)

Let  $n$  = the number

## Writing Algebraic Expressions

A taxi charges \$4.00 plus \$3.00 for each mile. Write an algebraic expression that represents the cost an "m" mile trip.

10 miles

$$10 \cdot 3 + 4$$

15 miles

$$15 \cdot 3 + 4$$

Let  $m = \# \text{ miles}$

$$m \cdot 3 + 4$$

$$3m + 4$$

OP

$$4 + 3m$$

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LMS sold tickets for a school play. The price of an adult ticket was \$6, the price of a student ticket was \$4. Write an expression that represents the total amount of money collected.

\* Think... How would I figure the total cost for two adult tickets and five student tickets?

Prickend #5

$$2 \cdot 6 + 5 \cdot 4$$

\* What variables will I need to define to write an algebraic expression for any number of tickets?

Let  $a = \# \text{ of adults}$

$s = \# \text{ of students}$

\* Write the algebraic expression asked for in the problem.

$$a \cdot 6 + s \cdot 4$$

$$6a + 4s$$

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Write an algebraic expression for each of the following word phrases. Let  $n = \text{the number}$ .

1) four more than twice a number

$$2n + 4$$

2) six less than a number

$$n - 6$$

3) the product of a number and seven

$$7n$$

4) the quotient of a number squared and two

$$\frac{n^2}{2}$$

5) the difference of a number and three

$$n - 3$$

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The answer is \_\_\_\_\_. Write the question.

Write an algebraic expression with the variable  $x$  that has a value of ten when evaluated.

Evaluate

if  $x =$

Write an algebraic expression with the following conditions:

\* variable  $n$

\* a value of four when evaluated

\* two operations

Evaluate

if  $n =$

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