1.1: Evaluate ExpressionsGoals: *Evaluate algebraic expressions using basic operations
*Evaluate algebraic expressions using exponents

Variable - <u>letter</u>	, or symbol, used to represent one or	more <u>numbers</u> .	
Ex: <i>x</i> , <i>y</i> , <i>z</i>			
<u>Value</u> – the <u>number</u> Ex: If <i>x</i> is the variable and	that replaces a variable. x = 3, the value of the variable is 3.		
Expressionmath	sentence that hasnumbers	,operations, and	d
variables	. (**It does <u>NOT</u> have an <u>equals</u>	sign!!!)	
Ex: $5 + x$ <u>Algebraic expression</u> – an	expression that has at leas	st one <u>variable</u> .	
Algebraic Expression	Meaning	Operation	
1. $\frac{14}{y}$	14 divided by y	Division	
2. $5+c$	5 plus <i>c</i>	Addition	
3. 6 <i>n</i>	6 times n	Multiplication	
4. $4-x$	4 minus <i>x</i>	Subtraction	

******Do **NOT** use <u>___</u>x__ to show multiplication anymore! *****It is too easy to get confused with a variable. Use parenthesis, middle dot, or don't need anything if it is a number and a variable.

Steps to Evaluate an expression:

1. Write down the <u>expression</u> .	Ex : Evaluate $13n$ when $n = 3$
2. <u>Substitute</u> , or change the variable to	13(3) 39
its <u>value</u> .	
3. Simplify. (Do the <u>math</u>)	
*Be sure to follow <u>PEMDAS</u> if there is more than one step.	

Evaluate when n = 3.

Ex: $n + 8$
- 1 3 + 8
2 11

Evaluate when y = 2.

Ex: 6 <i>y</i>	Ex: $\frac{8}{y}$	Ex: $y + 4$
6(2)	$\frac{8}{2}$	2 + 4
12	4	6

Evaluate when c = 4.

Ex: 4 <i>c</i>	Ex: $15 + c$	Ex: $17 - c$
4(4)	15 + 4	17 – 4
16	19	13

Ex: The total cost of going to the movies can be represented by the expression a + r where *a* is the cost of admission and *r* is the cost of refreshments. Suppose you pay \$7.50 for admission and \$7.25 for refreshments, find the total cost of going to the movies.

a + r7.50 + 7.25 14.75

Exponents:

<u>Power</u>: an expression that represents repeated multiplication

Base: The number that is being repeatedly multiplied

Exponent: The number of times to multiply the base. Written top right corner of the base

Ex: $3^4 = 3 \cdot 3 \cdot 3 \cdot 3 = 81$

Say in words and write out as multiplication:

Ex: $5^2 = 5.5$ "5 squared" or "5 to the second power" Ex: $\left(\frac{1}{2}\right)^3 = \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2}$ "one half cubed" or "one half to the third power"

Ex: $7^1 = 7$ "7" or "7 to the first power" **Ex:** $x^5 = x \cdot x \cdot x \cdot x \cdot x$ "*x* to the fifth power"

Evaluate the expressions for the given values.

Ex: $x^4, x = 2$	Ex: n^3 , $n = 1.5$	Ex: $y^5, y = 3$
(2) ⁴	(1.5) ³	(3) ⁵
$2 \cdot 2 \cdot 2 \cdot 2$	$1.5 \cdot 1.5 \cdot 1.5$	3.3.3.3.3
16	3.375	243
Ex: $x^3, x = 8$	Ex: $k^2, k = 2.5$	Ex: d^4 ; $d = 1$
512	6.25	1

Ex: The edge of a medium-size storage cube is 14 inches long. Find the volume of the storage cube.

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To find volume use the expression s^3
(14)<sup>3</sup>
2,744 inches<sup>3</sup>
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Ex: Find the area of a square garden whose side length is 22 feet.

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To find area of a square use the expression s^2
(22)<sup>2</sup>
484 ft<sup>2</sup>
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