Name: _____ Date: _____

Completed Notes
Algebra Section 1.1
Pages 2-7

Goal: "I will evaluate an expression given a value for the variable with exponents"
"I will write an expression to represent a situation"

Vocabulary:

Variable: A letter used to represent one or more numbers.

Expression: A number sentence consisting of numbers, variables, and operations

What is the difference between an algebraic expression and an algebraic equation? An algebraic equation has an equals sign and an expression does not.

Power: An expression that represents repeated multiplication of the same factor.

Expressions

Examples of expressions: $6x$ $3x+8$ $9n-5$

Evaluating expressions:
1) Input the values
2) Simplify using Order of Operations

Example: Evaluate $3x+5$ for $x=10$

1) Input the values $3 \cdot \mathbf{10} + 5$
2) Simplify using Order of Operations $30+5$
35

Try These:

Evaluate the expressions below when $n=5$

(a) $13n$
$13 \cdot 5$
65

(b) $\frac{9}{n}$
$\frac{9}{5}$
$1\frac{4}{5}$

(c) $n-1$
$5-1$
4

Evaluate the expressions below when $y = 2$.

(a) $6y - 3$
$6 \cdot 2 - 3$
$12 - 3$
9

(b) $y + 4$
$2 + 4$
6

(c) $11 - 2y$
$11 - 2 \cdot 2$
$11 - 4$
7

Evaluate the expressions below when $c = 4$.

(a) $4c+1$
$4 \cdot 4 + 1$
$16+1$
17

(b) $\frac{8}{c}$
$\frac{8}{4}$
2

(c) $(15 + c)-3$
$(15 + 4) - 3$
$19 - 3$
16

Writing an expression:
Example:
Sally is going to the movies with her friends. She is buying one box of popcorn for $9 and movie tickets for each person costing $12 each. Write an expression to show the total amount spent.
What is varying or unknown? The number of movie tickets bought

Expression: $12x+9$

What does the variable stand for? The number of movie tickets purchased

Try These:
The oven repairman charges $40 for the service call and $25 an hour for the service.
Write an expression to show the total cost for the repair.

What is varying or unknown? The number of hours of service

Expression: $40+25x$

What does the variable stand for? The number of hours of service

Exponents
In the expression 2^5, what number is the base? 2
Note: $4^0=1$ (Anything to the 0 power=1)

Example: 4^3
Expand $4 \cdot 4 \cdot 4$
Simplify $16 \cdot 4$
64

Try These:

(a) 5^3
Expand $5 \cdot 5 \cdot 5$
Simplify 125

(b) $\left(\frac{1}{3}\right)^4$
Expand $\frac{1}{3} \cdot \frac{1}{3} \cdot \frac{1}{3} \cdot \frac{1}{3}$
Simplify $\frac{1}{81}$

(c) 1.4^2
Expand $1.4 \cdot 1.4$
Simplify 1.96

(a) $x^3, x = 8$
8^3
$8 \cdot 8 \cdot 8$

(b) $k^2, k = 2.5$
2.5^2
$2.5 \cdot 2.5$

(c) $d^4, d = \frac{1}{3}$
$\left(\frac{1}{3}\right)^4$
$\frac{1}{3} \cdot \frac{1}{3} \cdot \frac{1}{3} \cdot \frac{1}{3}$