Algebra I
Notes 1.3 Exploring Variables and Equations

Objectives:

- Use variables, expressions and equations to model situations.
- Evaluate expressions using substitution.

_____ - a letter that is used to represent numbers

_____ - variables combined with numbers and operations (+, –, •, ÷)

_____ - two equivalent expressions separated by an equal sign

Examples:

variable expression equation

Identify each of the following as an *expression* or an *equation.*

$3y - 1$ _____ $2x = 5$ _____

$7 = 3 - 4a$ _____ $4w$ _____

Make a table to show the substitutions of 1, 2, 3, 4 and 5 for the variables in these expressions.

x	1	2	3	4	5
6x					

y	1	2	3	4	5
2y + 1					

b	1	2	3	4	5
-2b					

a	1	2	3	4	5
4a – 3					

Find the values of each expression by substituting **2 for x, 3 for y and 5 for z.**

$3z + 2$ _____ $x + y$ _____ $z - x$ _____

Find the values of each expression by substituting **4 for x, 8 for y and 10 for z.**

$3z + 2$ _____ $x + y$ _____ $z - x$ _____

Extend the table of values. Write an **equation** to describe the pattern between the variables.

a	1	2	3	4	5	6	7	8
b	4	8	12	16				

_____

g	5	10	15	20	25	30	35	40
h	11	21	31	41				

_____

A potato chip contains 10 calories. Let p = # of potato chips. Let c = # of calories.
Complete the table then write an **equation** to describe the situation.

p	1	2	3	4	5	6	7	8
c								

_____

A can of dog food costs $.50. Let x = # of cans of dog food. Let c = cost.
Complete the table then write an **equation** to describe the situation.

x	1	2	3	4	5	6	7	8
c								

_____

Write an equation then solve. **Make sure your answer makes sense for the situation.**

If tickets for a concert cost $14 each, how many can you buy for $85?
Let t = # of tickets.

Equation: _____ Solution: _____ Answer: _____

How many $2 raffle tickets did you need to sell to raise $25?
Let t = # of tickets.

Equation: _____ Solution: _____ Answer: _____