AGS 3 Name: _____ Period: _____ Date: _____

Assignment 1.1

Carlos and Clarita had 360 square feet of space to use for their pet sitting business, each cat pen uses 6 square feet and each dog run uses 24 square feet. They created this table to show all combinations that would use the entire space.

cats	0	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60
dogs	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

1. Write five ordered pairs that have cats as the input value and dogs as the output value.

   Answers will vary, but all are (cat, dog)

2. Write an explicit equation that shows the number of dogs they can accommodate based on how many cats they have. [d will be a function of c]

   $$d(c) = -\frac{1}{4}c + 15$$

3. Write five ordered pairs that have dogs as the input value and cats as the output value.

   Answers will vary, but all are (dog, cat)

4. Write an explicit equation that shows the number of cats they can accommodate based on how many dogs they have. [c will be a function of d or $c = g(d)$]

   $$c(d) = -4d + 60$$

5. Describe how are the ordered pairs you made in #1 and #3 are different?

   Inputs and outputs are swapped

6. a. Describe the domain for #2 Multiples of 4 from [0 – 60]

   b. Describe the domain for #4 integers from [0, 15]

   c. What is the relationship between them?

      The domain of #4 is the range of #2, and vice versa

Refresh Your Memory

Use the following functions:

$f(x) = x$ $\quad\quad$ $g(x) = 5x - 12$ $\quad\quad$ $h(x) = x^2 + 4x - 7$

Use the given input value in the correct function from above to calculate the output value or fully simplify.

7. a. $f(10)$ b. $f(-2)$ c. $f(a)$ d. $f(a+b)$

$f(10) = 10$ $\quad\quad$ $f(-2) = -2$ $\quad\quad$ $f(a) = a$ $\quad\quad$ $f(a+b) = a+b$

8. a. $g(10)$ b. $g(-2)$

$g(10) = 38$ $\quad\quad$ $g(-2) = -22$

c. $g(a)$ d. $g(a+b)$

$g(a) = 5a - 12$ $\quad\quad$ $g(a+b) = 5a + 5b - 12$

9. a. $h(10)$ b. $h(-2)$

$h(10) = 133$ $\quad\quad$ $h(-2) = -11$

c. $h(a)$ d. $h(a+b)$

$h(a) = a^2 + 4a - 7$ $\quad\quad$ $h(a+b) = a^2 + 2ab + b^2 + 4a + 4b - 7$

10. Identify what kind of function each equation makes.

a. $f(x) = x$ is a _____linear_____ function.

b. $g(x) = 5x - 12$ is a _____linear_____ function.

c. $h(x) = x^2 + 4x - 7$ is a _____quadratic_____ function.