ANSWER KEY

Function Notation

When a function can be written as an equation, the symbol f(x) replaces y and is read as "the value of f at x" or simply "f of x."

This does NOT mean f times x.

Replacing y with f(x) is called writing a function in **function notation**.

REMEMBER***

f(-3) means -3 is your input and you plug it in for x

f(x) = -3 means that your whole function is = to -3 and you plug into the y.

Examples:

If f(x) = 2x – 3, find the following:

a. f(-2) $= 2(-2)-3 = -4-3 = \boxed{-7}$

b. f(7) $= 2(7)-3 = 14-3 = \boxed{11}$

c. f(-4) $= 2(-4)-3 = -8-3 = \boxed{-11}$

If k(x) = -7x + 1, find the following:

d. k(0) $= -7(0)+1 = \boxed{1}$

e. k(-1) $= (-7)(-1)+1 = 7+1 = \boxed{8}$

f. k(5) $= -7(5)+1 = -35+1 = \boxed{-34}$

Sometimes, there will be multiple x's in an equation. When this occurs, simply replace both values of x.

If h(x) = x^2 – 3x + 5, find the following:

a. h(-3) $(-3)^2-3(-3)+5 = 9+9+5 = \boxed{23}$

b. h(5) $(5)^2-3(5)+5 = 25-15+5 = 10+5 = \boxed{15}$

If p(x) = x^2 + 5x – 3, find the following:

c. p(-2) $(-2)^2+5(-2)-3 = 4-10-3 = \boxed{-9}$

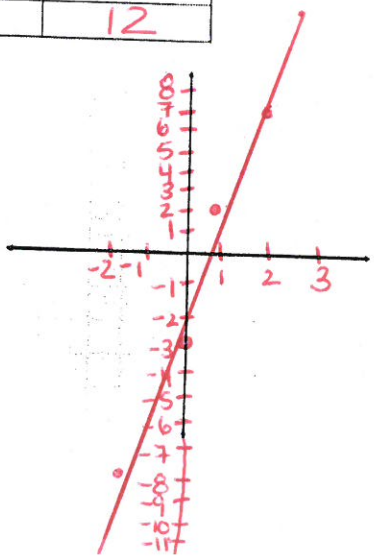
d. p(1) $(1)^2+5(1)-3 = 1+5-3 = \boxed{3}$

If f(x) = 5x - 3, fill out the following table of values:

x	-2	-1	0	1	2	3
f(x)	-13	-8	-3	2	7	12

What type of function is this?

Linear



Problem 2 Functions as Tables

The function $h(a)$ represents the average height of boys that are a years old.

Boy's Age	Average Height in Inches
6 months	26
12 months	30
18 months	34
2 years	36
3 years	39
4 years	42
5 years	44
6 years	47
7 years	49
8 years	51
9 years	53
10 years	55
11 years	57
12 years	59
13 years	61

1. Use the table to evaluate the function at each value. Explain what each means in terms of the problem.

a. $h(7) = 49$

At 7 years old a boy's avg height is 49".

b. $h(1.5) = 34$

At 18 months old a boy's avg height is 34"

c. $h(11) = 57$

At 11 years old a boy's avg height is 57".

d. $h(12.5) = 60$

At 13 years old a boy's avg height is 60"

2. Calculate the value of a that makes each equation true. Explain what each means in terms of the problem.

a. $h(a) = 61$

$a = 13$ years old

b. $h(a) = 36$

$a = 2$ years old

c. $h(a) = 53$

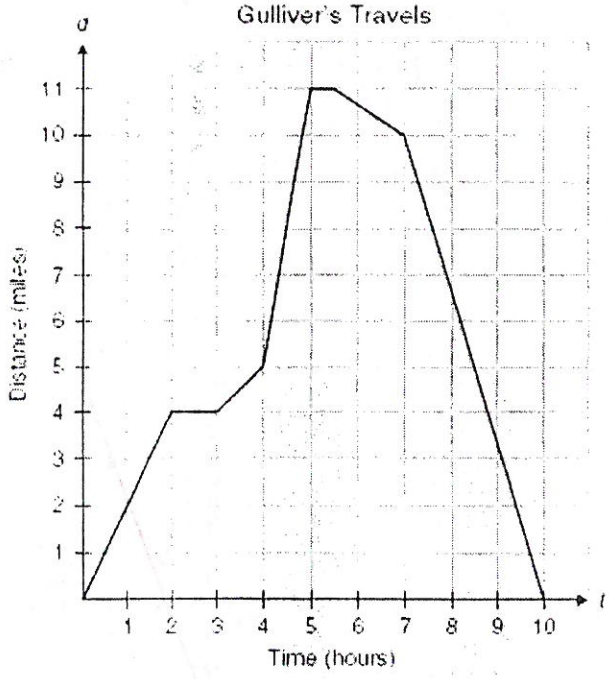
$a = 9$ years old

d. $h(a) = 45$

$a = 5.5$ years old

At a certain average height (a), the age of a boy might be determined.

Problem 3 Functions as Graphs



The function $d(t)$ represents Gulliver's distance from home after t hours.

1. Use the graph to evaluate the function at each value. Explain what each means in terms of the problem.

a. $d(2) = 4$ miles

b. $d(5) = 11$ miles

c. $d(2.9) = 4$ miles

d. $d(10) = 0$ miles

At 2.9 hours, Gulliver's distance would be 4 miles.

2. Calculate the value of t that makes each equation true. Explain what each means in terms the problem.

a. $d(t) = 2$

$t = 1$

b. $d(t) = 5$

$t = 4$

c. $d(t) = 4$

$t = 2$

d. $d(t) = 0$

$t = 0$ or $t = 10$

At distance 4 miles, the approximate time would be 2 hours.

Algebra I
Function Notation Worksheet

Name: _____
Hour: _____ Date: _____

1. Evaluate the following expressions given the functions below:

$g(x) = -3x + 1$ $\quad f(x) = x^2 + 7$ $\quad h(x) = \frac{12}{x}$ $\quad j(x) = 2x + 9$

a. $g(10) =$ $-3(10) + 1 = \boxed{-29}$

b. $f(3) =$ $(3)^2 + 7 = \boxed{16}$

c. $h(-2) =$ $\frac{12}{-2} = \boxed{-6}$

d. $j(7) =$ $(7)^2 + 9 = 49 + 9 = \boxed{23}$

e. h(a)

f. Find x if $g(x) = 16$ a. $16 = -3x + 1$ b. $16 - 1 = -3x + 1 - 1$ c. $15 = -3x$ d. $\frac{15}{-3} = \frac{-3x}{-3}$ e. $-5 = x$ $x = \boxed{-5}$

g. Find x if $h(x) = -2$ a. $-2 = \frac{12}{x}$ b. $-2 \cdot x = \frac{12}{x} \cdot x$ c. $-2x = 12$ d. $\frac{-2x}{-2} = \frac{12}{-2}$ e. $x = \boxed{-6}$

h. Find x if $f(x) = 23$ a. $23 = x^2 + 7$ b. $23 - 7 = x^2 + 7 - 7$ c. $16 = x^2$ d. $\sqrt{16} = \sqrt{x^2}$ e. $4 = x$ $\boxed{x = \pm 4}$

i. CHALLENGE! (in other words, optional) g(b+c)

j. CHALLENGE! (also optional) f(h(x))

2. Translate the following statements into coordinate points:

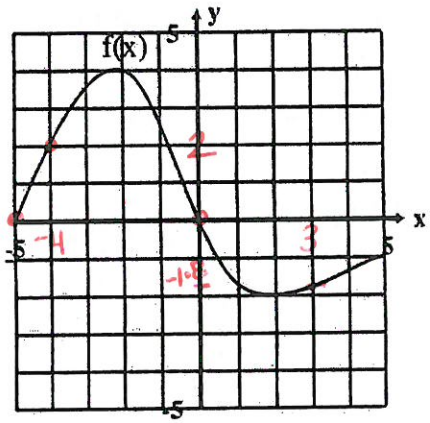
a. $f(-1) = 1$ $(-1, 1)$

b. $h(2) = 7$ $(2, 7)$

c. $g(1) = -1$ $(1, -1)$

d. k(3) = 9 (3, 9)

3. Given this graph of the function f(x):



Find:

a. f(–4) = 2 **b.** f(0) = 0 **c.** f(3) = -1.8 **d.** f(-5) = 0

e. x when f(x) = 2 = -4

f. x when f(x) = 0 = 0