Name _____ **Date** _____

Algebra 1, Unit 3 – Functions

Notes on ***Function Notation & Evaluation***

f(x) notation

$f(x) = x + 1$ YOU SAY: _____

This does **NOT** mean f times x!

$f(x) = x + 1$ is the same as $y = x + 1$ So, $f(x)$ means the same thing as y.

Here's how it works:

$f(x) = x + 1$ If you want to plug in a "3" for x, you write $f(3)$.
You say "f of 3."

$f(3) = 3 + 1$

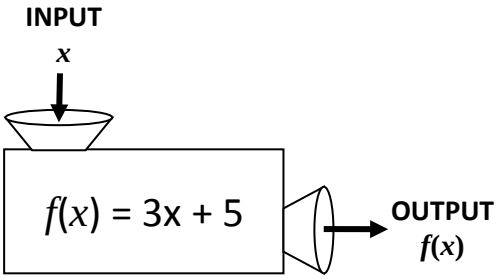
$f(3) = 4$ This means:

- When $x = 3$, $f(x) = 4$.
- When x is 3, y is 4. (3, 4)
- When Input is 3, output is 4.
- When the Domain is 3, the Range is 4.

You Try 1: $f(x) = x + 1$ Find $f(6)$ • When $x = 6$, _____. • When x is _____, _____. (,) • When Input is _____, _____. • When the Domain is _____, _____.
You Try 2: $f(x) = x + 1$ Find $f(-8)$ • When $x =$ _____, _____. • When x is _____, _____. (,) • When Input is _____, _____. • When the Domain is _____, _____.

***Function notation can use other letters besides f.
For example, you might see $g(x)$, $h(x)$, or $j(x)$. ***

Think about the input/output machine:



So, given a set of elements of the *domain*, you can use function notation to compute the *range*:

Example #1: Find the range. $f(x) = 2x - 9$ Domain: {0, 1, 3, 6}

Example #2: Find the range. $g(x) = 5x + 1$ Domain: {0, 7}

Example #3: Find the range. $f(x) = x + 4$ Domain: {-1, 2, 5}

USING THE TABLE on the CALCULATOR TO FIND RANGE:

Example #4: Find the range. $g(x) = x^2 + 3x + 4$ Domain: {-3, -2, 10, 12, 15}

Example #5: $f(x) = x - 4$ $g(x) = 2x + 3$

Find $f(6) + g(1)$ Find $f(1) + g(3)$

More function evaluation

Remember that x is the input (domain) and $f(x)$ is the output (range).

1) $f(x) = 4x + 3$

$f(2) =$ _____

$f(m) =$ _____

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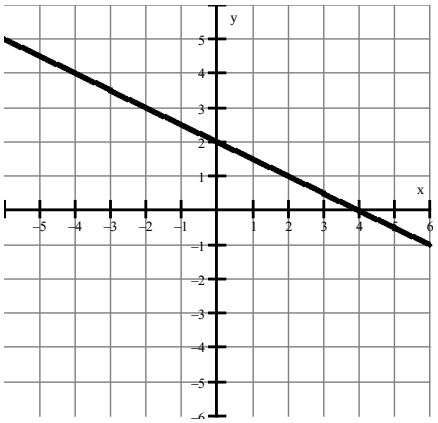
2) $g(x) =$



$g(2) =$_____ $g(-4) =$ _____ $g(0) =$ _____

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3) $h(x) = \{(3, 1), (2, 0), (5, -7), (8, 1)\}$

$h(5) =$ _____

$h(3) =$ _____

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4) What is the *range* of the function $f(x) = 5 - 6x$ when the *domain* is $\{-1, 0, 3, 5\}$?

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5) $g(x) = 1 - 3x$

When $g(x) = -5$, $x =$ _____

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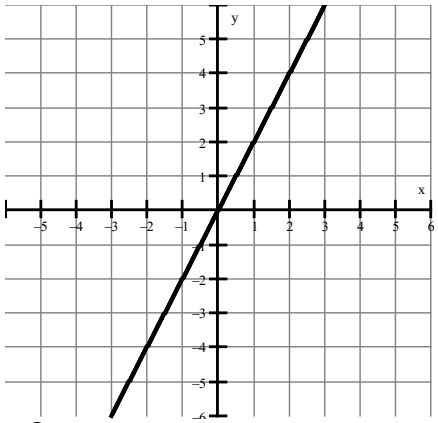
6) $h(x) =$



$h(x) = 2$, so $x =$ _____

$h(x) = 4$, so $x =$ _____

$h(x) = -2$, so $x =$ _____

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7) $f(x) = \{(2, 3), (8, -1), (6, -5)\}$

$f(x) = 3$, so $x =$ _____

$f(x) = -5$, so $x =$ _____

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8) What is the *domain* of the function $f(x) = x + 2$ when the *range* is $\{2, 0, -1\}$?

Try this one using the TABLE on the calculator.

9) What is the *domain* of the function $f(x) = 3x - 7$ when the *range* is $\{-10, -1, 5\}$?

Finding patterns in a table:

Table 1: What is the missing value?

x	y
-3	14
-2	11
-1	?
0	5
1	2
2	-1

Table 2: What is the missing value?

x	y
-4	8
-2	4
-1	?
0	0
1	-2
2	-4

Table 3: What is the missing value?

x	8	2	7	9	4	?
y	64	4	49	81	16	25

Table 4: What is the missing value?

x	y
0	1
1	2
2	5
3	10
4	17
5	?