

NAME:

DATE:

Key

A2.Q1.BERMEL:

FUNCTIONS

(DAY F1)

NOTES

A relation is a pairing of inputs with outputs

a function is a special relation for which each input has exactly one output.

input $x \rightarrow \boxed{f(x)} \rightarrow \text{output } y$

1. Consider the function: $f(x) = 3x - 6$

* let $y = f(x)$

A. Find $f(4)$

$$f(4) = 3(4) - 6$$

$$f(4) = 12 - 6$$

$$\boxed{f(4) = 6}$$

B. Find $f(-1)$

$$f(-1) = 3(-1) - 6$$

$$f(-1) = -3 - 6$$

$$\boxed{f(-1) = -9}$$

C. Find the "y-intercept" of the function.

$$f(0) = 3(0) - 6$$

$$f(0) = 0 - 6$$

$$\boxed{f(0) = -6}$$

D. Is $x=2$ a zero of the function?

True or False $\rightarrow f(2) = 0$

$$f(2) = 3(2) - 6$$

$$f(2) = 6 - 6$$

$$\boxed{\begin{array}{l} \text{TRUE} \\ f(2) = 0 \end{array}}$$

* y-intercept is when
 $x=0$

* a zero of the function
is when $f(x) = 0$
 $y=0$

E. Write each of the results of A, B, C, and D in terms of their input/output relationship.

input $\rightarrow$ output

4 $\rightarrow$ 6

-1 $\rightarrow$ -9

0 $\rightarrow$ -6

2 $\rightarrow$ 0

F. Write each of the results of A, B, C, and D in a table of values.

x	y
4	6
-1	-9
0	-6
2	0

input $x \rightarrow \boxed{f(x)} \rightarrow \text{output } y$

2. Consider the function: $g(x) = -\frac{1}{5}x + 1$

A. Find $g(10)$ $g(10) = -\frac{1}{5}(10) + 1$

$$g(10) = -2 + 1$$

$$\boxed{g(10) = -1}$$

B. Find $g(-5)$ $g(-5) = -\frac{1}{5}(-5) + 1$

$$g(-5) = 1 + 1$$

$$\boxed{g(-5) = 2}$$

C. Find the "y-intercept" of the function. $g(0) = -\frac{1}{5}(0) + 1$

$$\boxed{y = 1}$$

$$g(0) = 0 + 1$$

$$\boxed{g(0) = 1}$$

D. Is $x = 5$ a zero of the function?

$\boxed{\text{yes}}$

$$g(5) = -\frac{1}{5}(5) + 1$$

$$g(5) = -1 + 1$$

$$\boxed{g(5) = 0}$$

E. Write each of the results of A, B, C, and D in terms of their input/output relationship.

input output

$$10 \rightarrow -1$$

$$-5 \rightarrow 2$$

$$0 \rightarrow 1$$

$$5 \rightarrow 0$$

F. Write each of the results of A, B, C, and D in a table of values.

x	y
10	-1
-5	2
0	1
5	0

input $x \rightarrow \boxed{f(x)} \rightarrow \text{output } y$

3. Consider the function: $f(x) = \frac{4}{3}x - 16$

* Let $y = f(x)$

A. Find $f(9)$ $f(9) = \frac{4}{3}(9) - 16$

$$f(9) = 12 - 16$$

$$\boxed{f(9) = -4}$$

B. Find $f(-6)$ $f(-6) = \frac{4}{3}(-6) - 16$

$$f(-6) = -8 - 16$$

$$\boxed{f(-6) = -24}$$

C. Find the "y-intercept" of the function.

$$f(0) = \frac{4}{3}(0) - 16$$

$$f(0) = 0 - 16$$

$$\boxed{f(0) = -16}$$

D. Is $x = 3$ a zero of the function?

$$f(3) = \frac{4}{3}(\quad) - 16 \text{ True or False?}$$

$$f(3) = 4 - 16$$

$$f(3) = -12$$

False $f(3)$ does NOT equal zero

E. Write each of the results of A, B, C, and D in terms of their input/output relationship.

input $\rightarrow$ output

$$9 \rightarrow -4$$

$$-6 \rightarrow -24$$

$$0 \rightarrow -16$$

$$3 \rightarrow -12$$

F. Write each of the results of A, B, C, and D in a table of values.

x	y
9	-4
-6	-24
0	-16
3	-12