A. Bay
Algebra 1

Name: Key
Date:

Function Notation
3.3

You know that a linear function can be written in the form $y=mx+b$. By naming a linear function f, you can also write the function using **function notation.**

$f(x) = mx+b$

The notation $f(x)$, pronounced "f of x", is another name for y. If f is a function, and x is in its domain, then $f(x)$ represents the output of f corresponding to the input x.

Example 1: Evaluating a Function Replace the x's in the equation with the given value

Evaluate the function $f(x) = -4x + 7$ when $x = 2$ and $x = -2$.

$f(2) = -4(2)+7$
$= -8+7$
$f(2) = -1$ as an ordered pair $(2,-1)$

$f(-2) = -4(-2)+7$
$= 8+7$
$f(-2) = 15$
$(-2,15)$

Example 2: Interpreting Function Notation

Let $f(t)$ be the outside temperature (°F) t hours after 6 A.M. Explain the meaning of each statement.

a. $f(0) = 58$
0 hours after 6AM
So the temp at 6AM is 58°F

b. $f(6) = n$
6 hours after 6AM
So at NOON the temp is n°F

c. $f(3) < f(9)$
the temp 3 hours after 6A is less than the temp @ 9 hours after
temp@ 9 AM is less than the temp @ 3PM

Example 3: Solving for the Independent Variable

For $h(x) = \frac{2}{3}x - 5$, find the value of x for which $h(x) = -7$.

$-7 = \frac{2}{3}x - 5$
$+5 \quad +5$
$\frac{3}{2}(-2) = \left(\frac{2}{3}x\right)\frac{3}{2}$
$-3 = x$ as an ordered pair $(-3,-7)$

$h(-3) = -7$

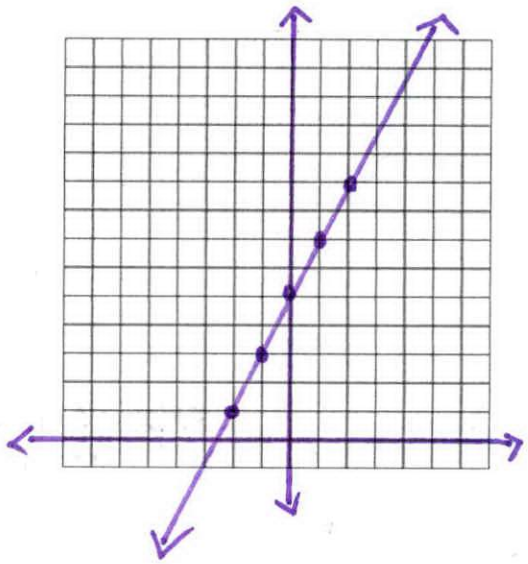
A. Bay
Algebra 1

Name: _____
Date: _____

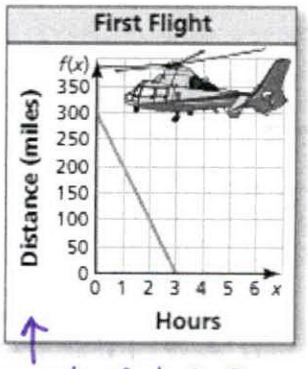
Example 4: Graphing a Linear Function

Graph $f(x) = 2x + 5$ input values for x to find f(x)

x	$2x+5$	$f(x)$
-2	$2(-2)+5$	1
-1	$2(-1)+5$	3
0	$2(0)+5$	5
1	$2(1)+5$	7
2	$2(2)+5$	9



Example 5: Modeling with Mathematics

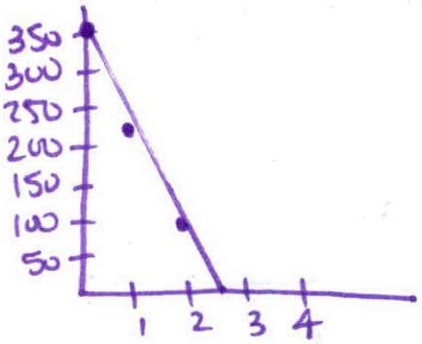


input 0, 1, 2, 3

The graph shows the number of miles a helicopter is from its destination after x hours on its first flight. One its second flight, the helicopter travels 50 miles farther and increases its speed by 25 miles per hour. The function $f(x) = 350 - 125x$ represents the second flight, where $f(x)$ is the number of miles the helicopter is from its destination after x hours. Which flight takes less time? Explain.

we want to compare distance based on the same input values then determine the total time of the flight

x	$350-125x$	$f(x)$
0	$350-125(0)$	350
1	$350-125(1)$	225
2	$350-125(2)$	100
3	$350-125(3)$	-25



the 2nd flight takes 2.8hrs which is shorter than 3 hours

$f(x) = 350 - 125x$
$0 = 350 - 125x$
$-350 \quad -350$
$-350 = -125x$
$\frac{-350}{-125} = \frac{-125x}{-125}$
$x = 2.8$

Homework: pg 111: 4-26 even, 33-35