Warm Up September 27, 2018

1.) Find the average rate of change for the following equation over the interval $1 \le x \le 3$. $[a, b]$

$$y = 3x^2 - 12x + 17$$

A. 8 B. 0 C. -6 D. -8

$$\frac{f(3)-f(1)}{3-1} = \frac{8-8}{2} = \frac{0}{2} = 0$$

2.) For the arithmetic sequence 13, 9, 5, 1,... determine a_n.

A. 17 + 4n B. 13 - 4n C. 17 - 4n

$d = -4$

$a_1 = 13$

$a_n = -4(n-1) + 13$

$a_n = -4n + 4 + 13$

$a_n = -4n + 17$

3.) What is the recursive equation for the sequence -2, 1, 4, 7, 10,...if $a_1 = -2$.

+3 +3 +3

$a_n = a_{n-1} + d$

$a_n = a_{n-1} + 3$

Comparing Linear Functions

1. Which function has a greater rate of change? Which function has the greater *y*-intercept? Explain how you know.

Slope

Function A

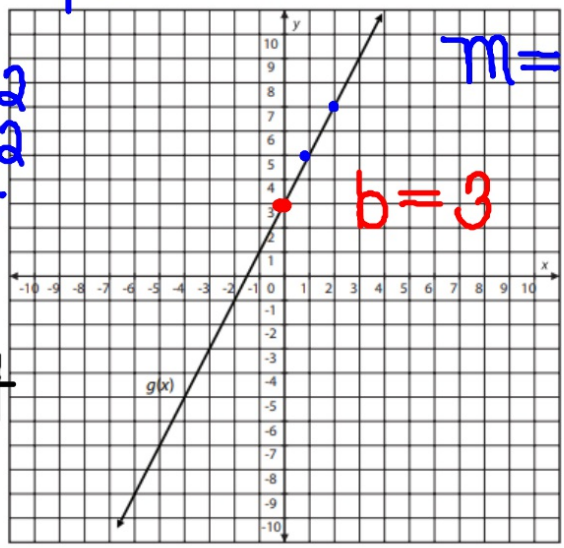
x	$f(x)$
−4	12
−1	0
2	−12
3	−16

+3 −12
+3 −12
+1 −4

m = −4

−1 0
0 −4 −4
2 −12

Function B



m = 2

b = 3

Function B has a greater rate of change.
Function B has a greater y-intercept.

3. Compare the properties of each function.

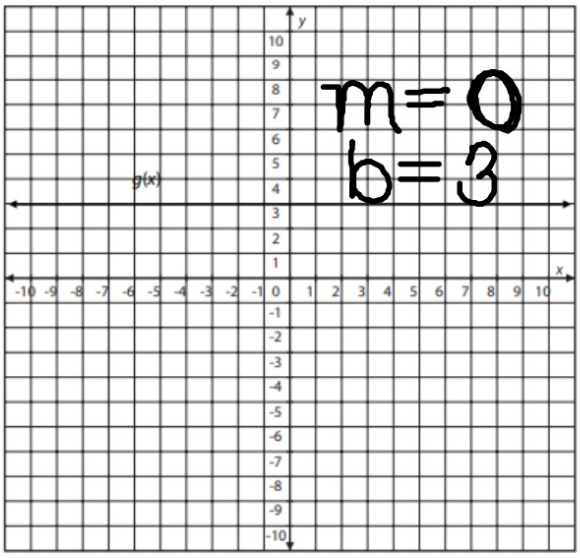
Function A

$f(x)=\frac{1}{4}x+3$

$m=\frac{1}{4}$

$b=3$

Function B



What would you consider the properties of linear functions? --> slope and y-intercept

Function A and B have the same y-intercept.
Function A has a greater slope.

5. Compare the properties of each function.

Function A

The following table describes the profit in dollars that a restaurant makes for the number of beverages it sells.

Number of beverages sold (x)	Profit ($f(x)$)
0	0
25	29.25
50	58.50
75	87.75

+25 +29.25

+25 +29.25

m = $1.17

b = 0

Function B

For each hamburger sold, the same restaurant makes a profit of $0.40.

m = .40

b = 0

Function A has greater profit.

Function A and B have the same y--intercept. No product sold equals no profit made.

7. Compare the properties of each function.

Function A

A rental store charges $40 to rent a steam cleaner, plus an additional $4 per hour.

$m = 4 \rightarrow$ cost per hr.

$b = 40$

$\hookrightarrow$ one time fee

Function B

The following table shows the total cost in dollars to rent a steam cleaner at a different rental store. $g(x)$ represents the total cost after x hours.

Hours (x)	Total cost ($g(x)$)
3	46
4	53
5	60
6	67

+1 ( ) +7

$m = 7$

$b = 25$

The hourly cost to rent the steam cleaner is greater at Function B.

The initial rental fee is greater at Function A.

9. Compare the properties of each function. What do the rate of change and y-intercept mean in terms of the scenarios?

Function A

The function $f(x) = 7.5 - 0.25x$ represents the pounds of puppy food remaining, $f(x)$, when the puppy is fed the same amount each day for x days.

Function B

The table represents the amount in pounds of puppy food remaining, $g(x)$, when the puppy is fed the same amount each day for x days.

Days (x)	Remaining food ($g(x)$)
4	9
5	8.75
6	8.5
7	8.25

m = -0.25
The puppy eats .25 pounds of puppy food each day.
b = 7.5
The original amount of dog food was 7.5 pounds.

Function B is a large bag of puppy food.

m = -0.25
The puppy eats .25 pounds of puppy food each day.
b=10
The original amount of dog food was 10 pounds.