Warm Up   2/18/19

1. Write the equation of the line passing through (-4, 16) and (5, 34)

$$m = \frac{34-16}{5+4} = \frac{18}{9} = 2$$

$$y - 34 = 2(x-5)$$
$$y - 34 = 2x - 10$$
$$\underline{+34 \qquad +34}$$
$$\boxed{y = 2x + 24}$$

2. Solve: -4(2x + 3)≤ 20 - 4x

$$-8x - 12 \leq 20 - \cancel{4x}$$
$$\underline{+4x \qquad\qquad +4x}$$
$$-4x - 12 \leq 20$$
$$\underline{+12 \quad +12}$$
$$-4x \leq 32$$
$$\overline{-4 \qquad -4}$$
$$\boxed{x \geq -8}$$

3. Write the equation used to solve the following ③ consecutive odd integers have a sum of -45

$$x + x+2 + x+4 = -45$$
$$\boxed{3x + 6 = -45}$$

4. Solve the following equation for b: ax + by = c

$$\cancel{ax} + by = c$$
$$\underline{-ax \qquad\quad -ax}$$
$$\frac{by}{y} = \frac{c - ax}{y}$$
$$\boxed{b = \frac{c - ax}{y}}$$

Comparing Linear Functions

Practice 2.8: Comparing Linear Functions

Compare the properties of the linear functions.

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

Function A

x	*f(x)*
−4	12
−1	0
2	−12
3	−16

(handwritten annotations alongside table:)
+3, +3, +1

−12, −12, −4

−1	0
0	−4
1	−8
2	−12

−4, −4, −4

m=−4
y-incpt
b=−4
x incpt = −1
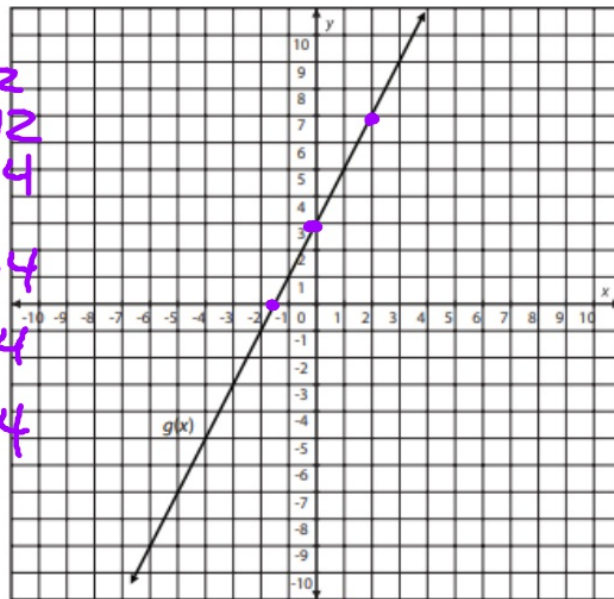
Function B

m=2
b=3
X-incpt
−1.5

Greater Slope: B
y-incpt: B
X-incpt: A

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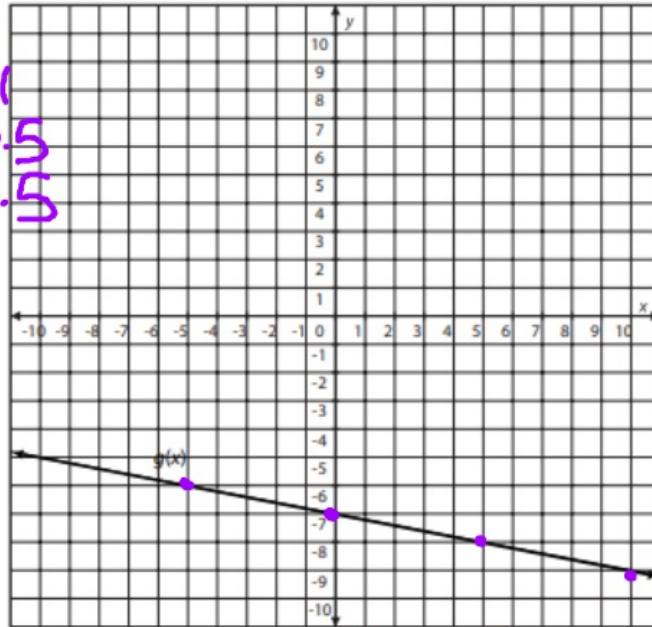
Function A

-16

8 { ... }

0 > +1

x	*f(x)*
−8	1
0	2
4	2.5
8	3

+8 <
+4 <
+4 <

> +(
> 0.5
> 0.5

$$m = \frac{0.5}{4} = \frac{1}{8}$$

$$b = 2$$

$$X\text{-incpt} = -16$$

Function B

$g(x)$

$$m = -\frac{1}{5}$$

$$b = -7$$

X-incpt = −35

$$y = -\frac{1}{5}X - 7$$

$$0 = -\frac{1}{5}X - 7$$

$$+7 \qquad +7$$

$$(-5)\ 7 = -\frac{1}{5}X\ (-5)$$

$$X = -35$$

3. Compare the properties of each function.

Function A

$$f(x) = \frac{1}{4}x + 3$$
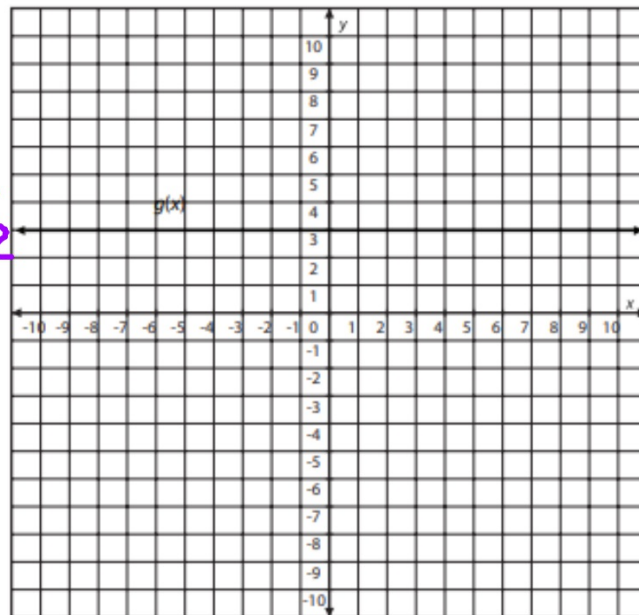
$m = \frac{1}{4}$ x-inp.
     = -12

$b = 3$

$0 = \frac{1}{4}x + 3$

$\frac{-3}{} \qquad \frac{-3}{}$

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

$x = -12$

Function B

$m = 0$

$b = 3$

x-incpt =

$\emptyset$

4. Compare the properties of each function.
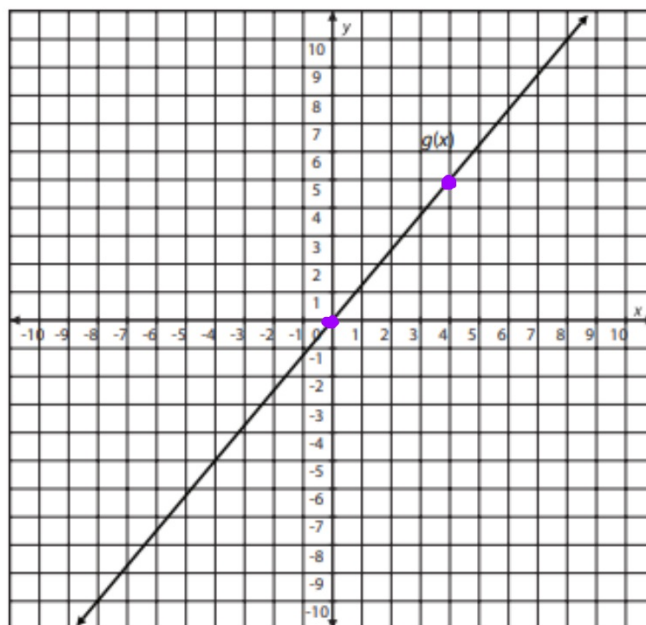
Function A

$f(x) = -5x$

$m = -5$

$b = 0$

X-incpt $= 0$

$\dfrac{0}{-5} = \dfrac{-5x}{-5}$

$x = 0$

Function B

$m = \dfrac{5}{4}$

$b = 0$

X-incpt $=$

0

5. Compare the properties of each function.

| **Function A** | **Function B** |

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< (handwritten) >29.25 (handwritten) y (handwritten above Profit)

m= 1.17
b= 0
X-incpt= 0

Function B

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

m = 0.40
b = 0
X-incpt = 0

6. Compare the properties of each function.

Function A

A local newspaper began with a circulation of 1,300 readers in its first year. Since then, its circulation has increased by 150 readers per year.

$m = 150$

$b = 1300$

$y = 150x + 1300$

$0 = 150x + 1300 - 950$

$\dfrac{-1300}{150} \quad \dfrac{-1300}{}$

$\dfrac{-1300}{150} = \dfrac{150x}{150}$

$x = -\dfrac{26}{3}$

Function B

The function $g(x) = 225x + 950$ represents the circulation of another newspaper where $g(x)$ represents total subscriptions and x represents the number of years since its first year.

$m = 225$

$b = 950$

$0 = 225x + 950$

$\quad -950$

$\dfrac{-950 = 225x}{225 \quad 225}$

$x = -\dfrac{38}{9}$

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.
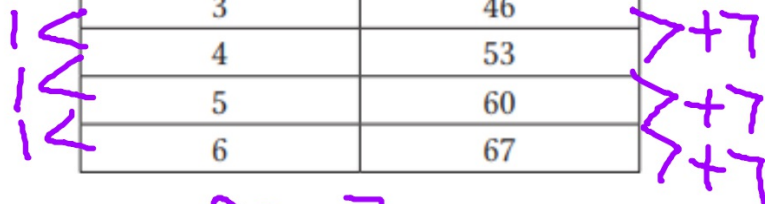
$m = 4$

$b = 40$

$x\text{-incpt} = -10$

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

$+7$
$+7$
$+7$

0
1
2

25
32
39

$M = 7$

$b = 25$

$0 = 7x + 25$

$x = -\dfrac{25}{7}$
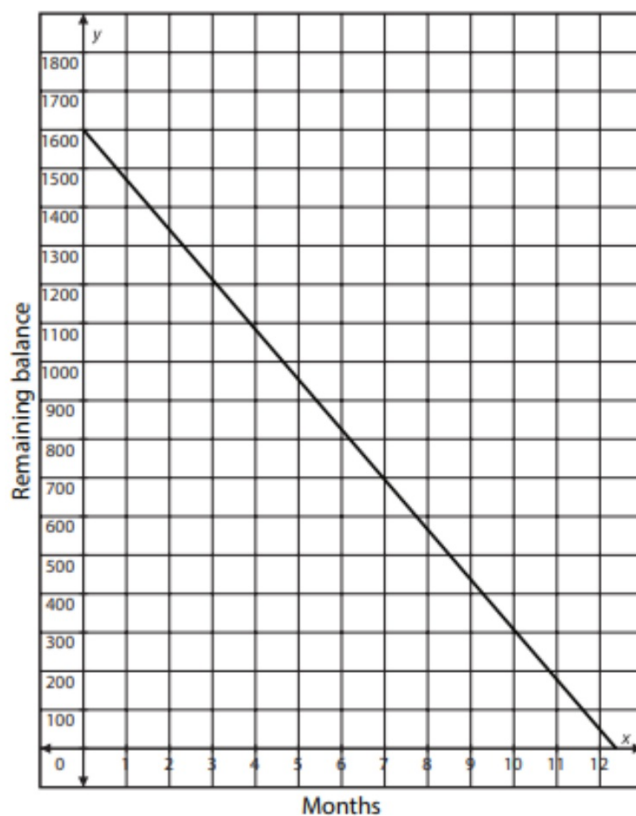
8. Compare the properties of each function.

Function A

The table shows the remaining balance in dollars, $f(x)$, of the cost of car repairs after x months.

Months (x)	Remaining balance ($f(x)$)
0	1560
1	1430
2	1300
3	1170

Function B

The graph shows the remaining balance in dollars, $g(x)$, of the cost of car repairs after x months.

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

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

Function A

Reggie bicycled 15 miles last week and plans to bicycle 20 miles each additional week.

Function B

The graph represents the total number of miles Zac plans to have bicycled by the end of each week.

Weeks