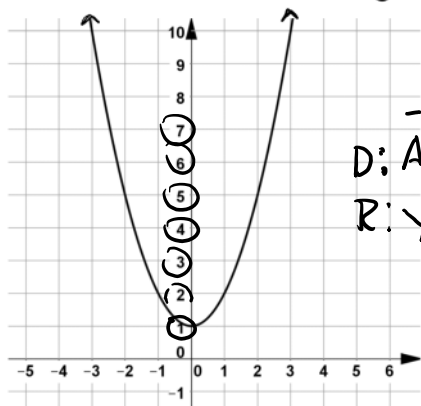


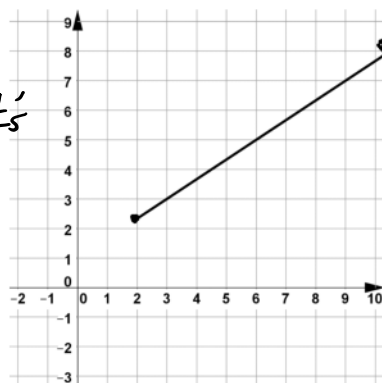
! DAILY QUEST:

State the domain and range for each graph.

1)



2)
 $-\infty < x < \infty$
 D: All Real #'s
 R: $y \geq 1$



D: $x \geq 2$
 R: $y \geq 2.5$

3) Solve for x given the $f(x) = g(x)$; $f(x) = 7x + 4$; $g(x) = 6x - 2$

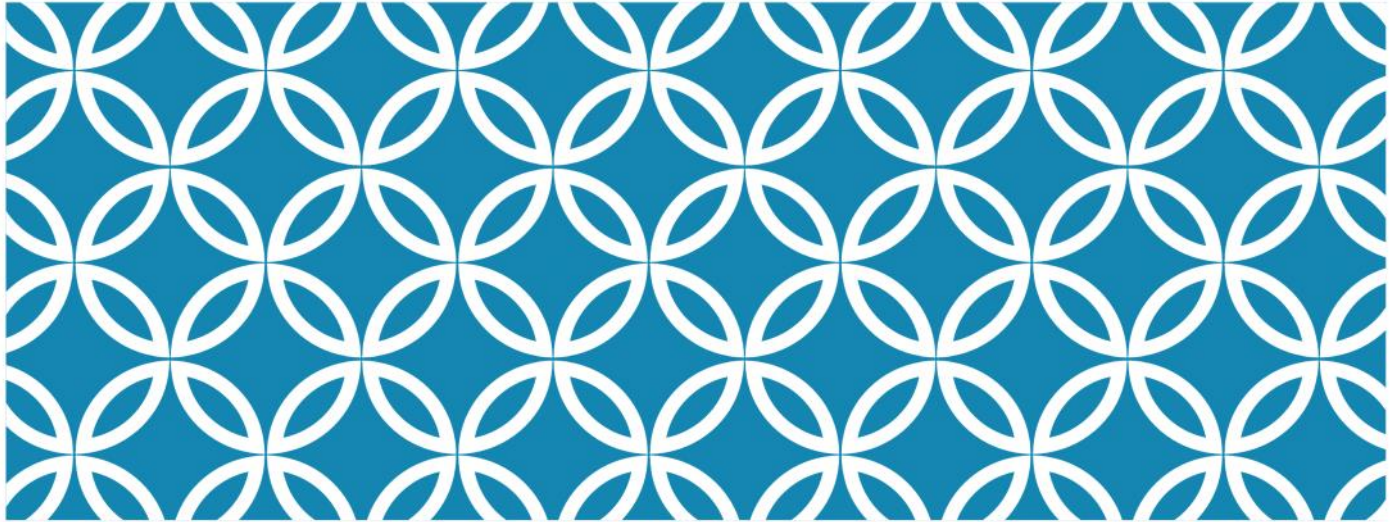
$$f(x) = 7x + 4$$

$$g(x) = 6x - 2$$

$$\begin{array}{r} 7x + 4 = 6x - 2 \\ -6x \quad -6x \\ \hline \end{array}$$

$$\begin{array}{r} x + 4 = -2 \\ -4 \quad -4 \\ \hline \end{array}$$

$$x = -6$$



LESSON 6.2
4. FIND/GRAPHING BY INTERCEPTS
5. INTERPRETING INTERCEPTS

Goal: To find, graph, identify key features of linear functions mathematically and in real world context.

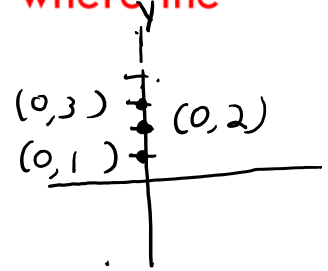
Objective: SWBAT to find/interpret the intercepts of a linear equation.

INTERCEPTS

The y-intercept is the y-coordinate of the point where the graph intersects the y-axis.

- The x-coordinate of this point is always 0.

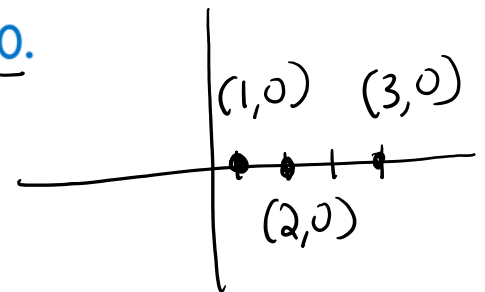
▪ Example $(0, 3)$
 x



The x-intercept is the x-coordinate of the point where the graph intersects the x-axis.

- The y-coordinate of this point is always 0.

▪ Example $(5, 0)$
 y



PROBLEM 1:

Find the x and y intercept. State your answers as order pairs.

$$3x - 2y = 12$$

x-int

$$3x - \cancel{2(0)} = 12$$

$$\underline{3x} = \underline{12}$$

$$x = 4$$

y-int

$$\cancel{3(0)} - 2y = 12$$

$$-2y = 12$$

$$y = -6$$

X-int (4, 0)

Y-int (0, -6)

PROBLEM 1A:

Find the x and y intercept. State your answers as order pairs.

$$-3x + 5y = 30$$

$$x\text{-int } (-10, 0)$$

$$y\text{-int } (0, 6)$$

PROBLEM 1B:

Find the x and y intercept. State your answers as order pairs.

$$4x - 2y = 16$$

$$x\text{-int } (4, 0)$$

$$y\text{-int } (0, -8)$$


PROBLEM 1C:

Find the x and y intercept. State your answers as order pairs.

$$\frac{2}{3}x + 6y = 6$$

$$\text{X-int } (9, 0)$$

$$\text{Y-int } (0, 1)$$

$$\frac{\cancel{3} \cdot 2}{\cancel{2}} x = 6 \cdot \frac{3}{2} = \frac{18}{2}$$
$$x = 9$$


THE ADVANTAGE OF STANDARD FORM

Find the x and y intercept. State your answers as order pairs.

$$y = mx + b$$

$$y = -3x + 6$$

$$0 = -3x + 6$$

$$\underline{+3x} \quad \underline{+3x}$$

$$\frac{3x}{3} = \frac{6}{3}$$

$$x = 2$$

Slope intercept form

$$x\text{-int}(2, 0)$$

$$y\text{-int}(0, 6)$$

$$y = -3(0) + 6$$

$$y = 6$$

$$Ax + By = C \quad \text{Standard form}$$

$$3x + y = 6$$

PROBLEM 2:

Sandy is exploring the ocean floor at 120 feet below the surface. She then ascended at a constant rate over a period of time. After two minutes she was at 60 feet below sea level. Then after two more minutes she was at the surface.

Create a graph to represent the situation.

What are the x and y-intercepts?

x-int (4, 0)
y-int (0, -120)

State the domain and range?

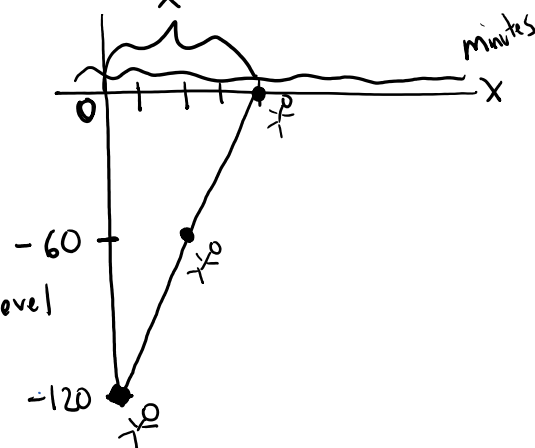
D: $0 \leq x \leq 4$
R: $-120 \leq y \leq 0$

What does the y-intercept mean in context?

At 0 minutes she is 120 feet below sea level

What does the x-intercept mean in context?

At 4 minutes she is at the surface.



PROBLEM 2A:

Shiloh runs the 200-meter dash at a rate of 8 meters per second. The function $f(x) = 200 - 8x$ gives the distance remaining after x seconds.

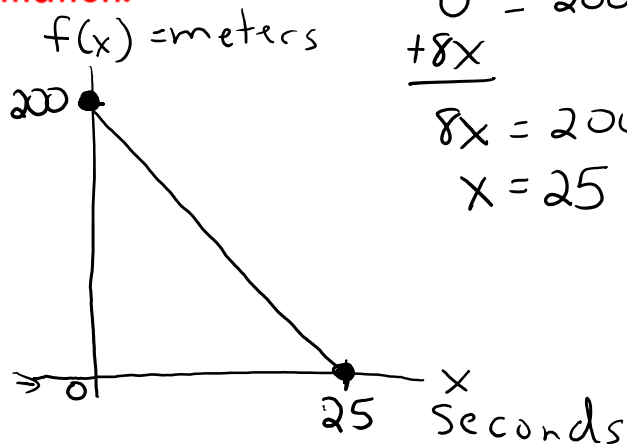
- What is the distance, when the race is at 0 seconds?
- How many seconds does it take for the distance to be 0?

Graph make a graph with that information.

What is the domain and range?

$$D: 0 \leq x \leq 25$$

$$R: 0 \leq y \leq 200$$



$$f(x)$$

$$(25, 0)$$

$$f(x) = 200 - 8x$$

$$0 = 200 - 8x$$

$$\begin{array}{r} +8x \\ \hline 8x = 200 \\ x = 25 \end{array}$$

PROBLEM 2B:

The Flash is racing up a 300 foot hill at a constant rate of 50 feet per second. The function $f(x) = 300 - 50x$ gives the distance remaining after x seconds

What is the distance, when the race is at 0 seconds?

How many seconds does it take for the distance to be 0?

Graph make a graph with that information.

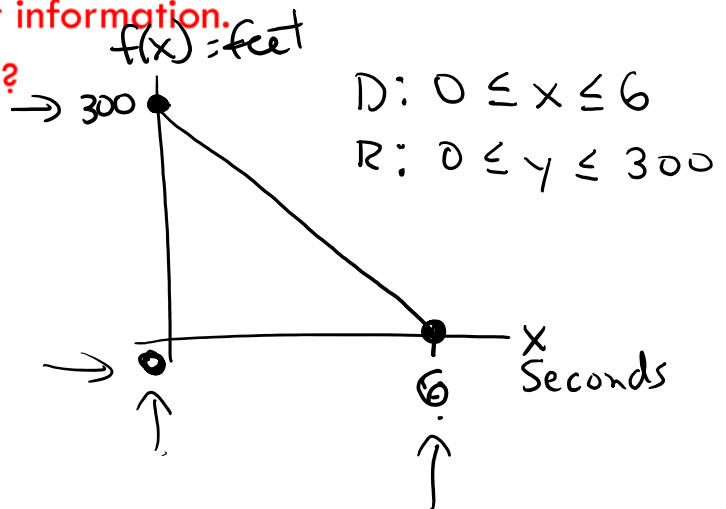
What is the domain and range?

$$f(x) = 300 - 50x$$

$$0 = 300 - 50x$$

$$\begin{array}{r} 50x \\ \hline 50x = 300 \\ \hline 50 \quad 50 \\ \hline x = 6 \end{array}$$

$$x = 6$$



PROBLEM 3:

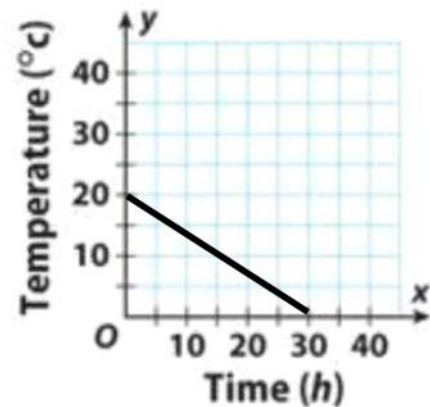
The temperature in an experiment is reduced at a constant rate over a period of time until the temperature reaches 0°C . The $y = 20 - \frac{2}{3}x$ gives the temperature y in degrees Celsius x hours after the beginning of the experiment.

What is the x-intercept and what does it mean? $(30, 0)$

At 30 hrs the temp. is at 0°C .

What is the y-intercept and what does it mean? $(0, 20)$

At 0 hrs the temp. is at 20°C



PROBLEM 3A:

An amateur filmmaker has \$6000 to make a film that costs \$75/h to produce. The function $f(x) = 6000 - 75x$ gives the amount of money left to make the film after x hours of production.

What does each intercept represent?



PROBLEM 3B:

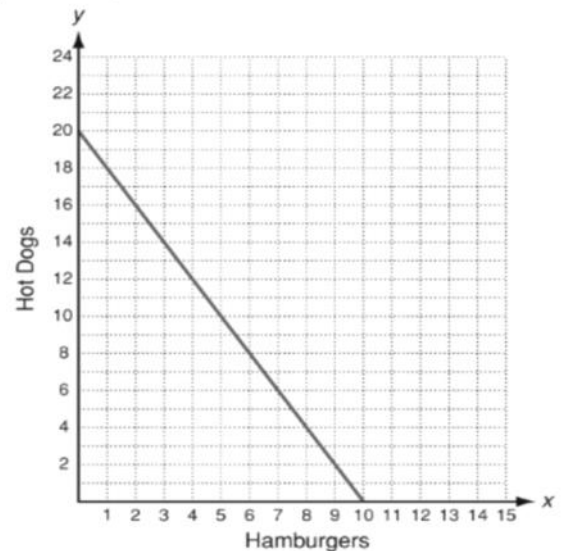
At a fair, hamburgers sell for \$3.00 each and hot dogs sell for \$1.50 each. The equation $3x + 1.5y = 30$ describes the number of hamburgers and hot dogs a family can buy with \$30.

What is the x-intercept and what does it mean? $(10, 0)$

You buy 10 hamburgers then
you buy 0 hotdogs

What is the y-intercept and what does it mean? $(0, 20)$

You buy 0 hamburgers then
you buy 20 hotdogs.

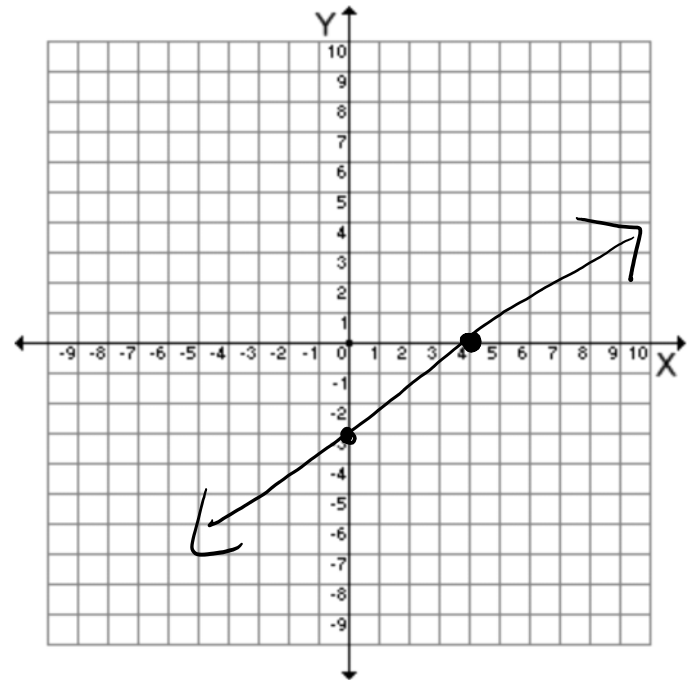


PROBLEM 4:

Use intercepts to graph the line described by each equation.

$$\cancel{3}x + 4y = -12$$

$$\begin{aligned} X\text{-int } (4, 0) \\ Y\text{-int } (0, -3) \end{aligned}$$



PROBLEM 4A:

Use intercepts to graph the line described by each equation.

$$y = \frac{1}{3}x - 2$$

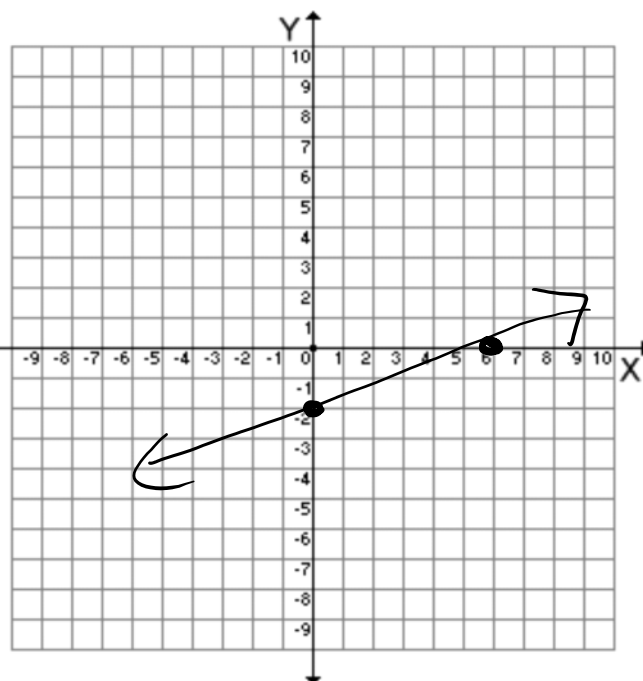
$$\text{X-int } (6, 0)$$

$$0 = \frac{1}{3}x - 2$$
$$\begin{array}{r} +2 \\ \hline \end{array} \quad \begin{array}{r} \\ +2 \end{array}$$

$$3 \cdot 2 = \frac{1}{3}x$$

$$6 = x$$

$$\text{Y-int } (0, -2)$$

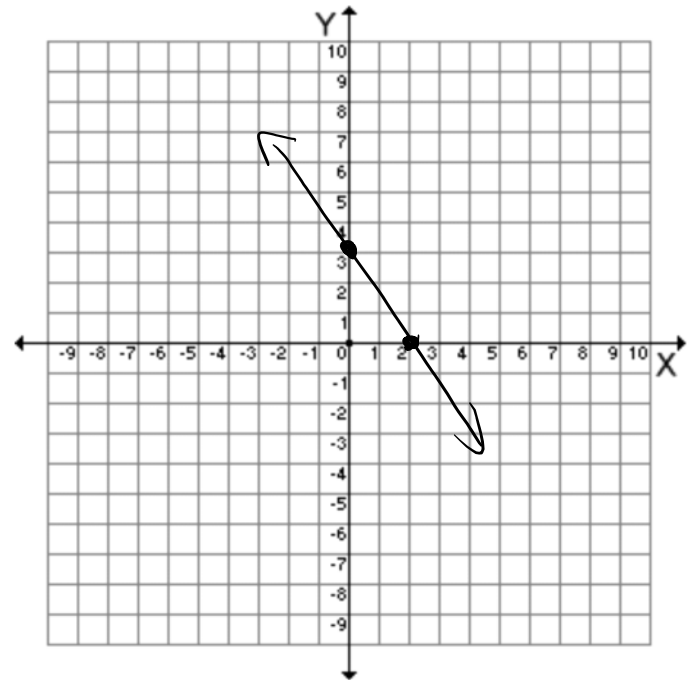


PROBLEM 4B:

Use intercepts to graph the line described by each equation.

$$3x + 2y = 6$$

$$\begin{aligned} X\text{-int } (2, 0) \\ Y\text{-int } (0, 3) \end{aligned}$$



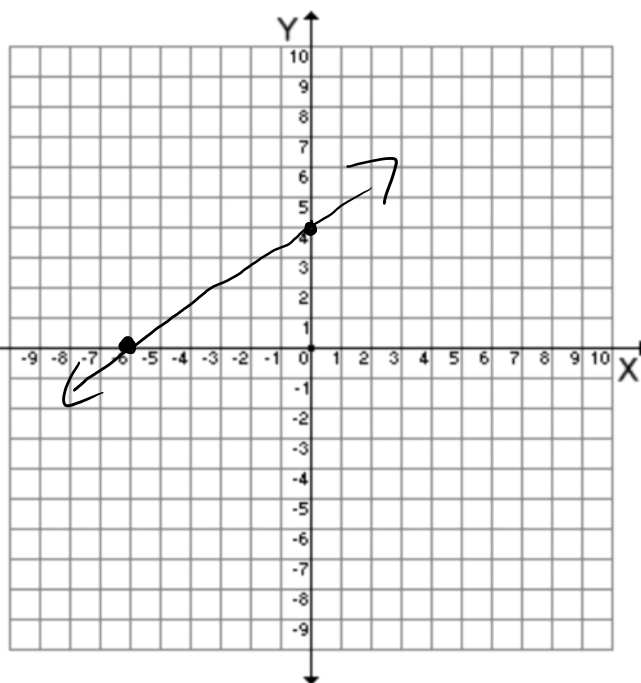
PROBLEM 4C:

Use intercepts to graph the line described by each equation.

$$y = \frac{2}{3}x + 4$$

x-int $(-6, 0)$

y-int $(0, 4)$



Pg 168

3-5, 7, 8, 10, 11

PS 149 - 208