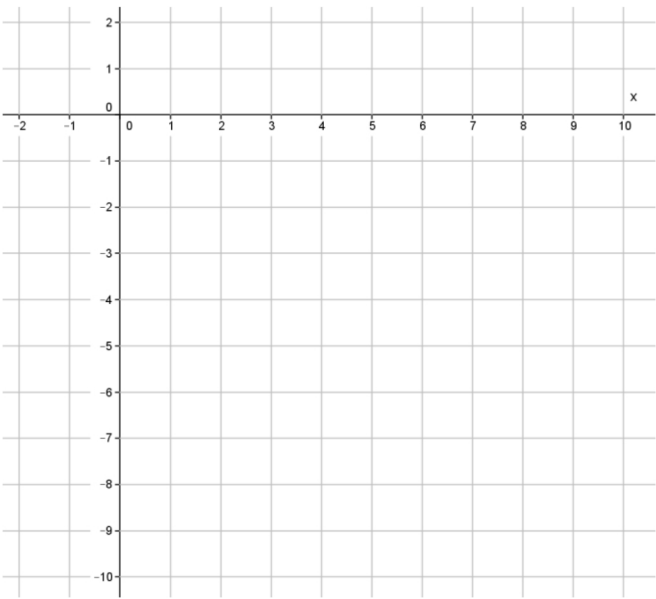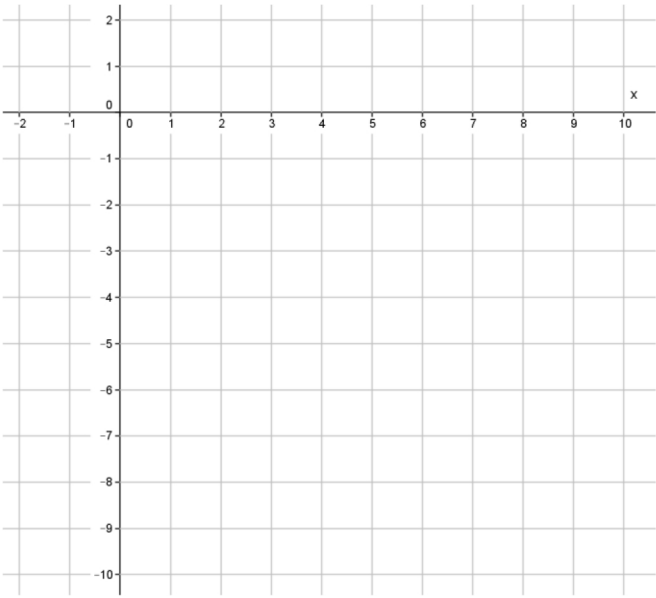Name _____   Date _____

The Graph of a Linear Equation in Two Variables Is a Line

Exit Ticket

1. Graph the equation $y = \frac{5}{4}x - 10$ using the y-intercept and slope.

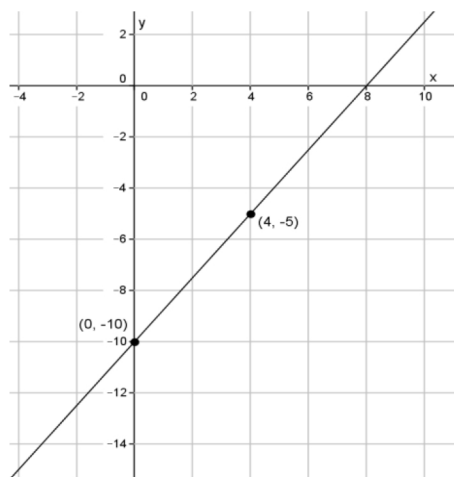2. Graph the equation $5x - 4y = 40$ using intercepts.

Graph each of the equations in the Problem Set on a different pair of x and y axes.
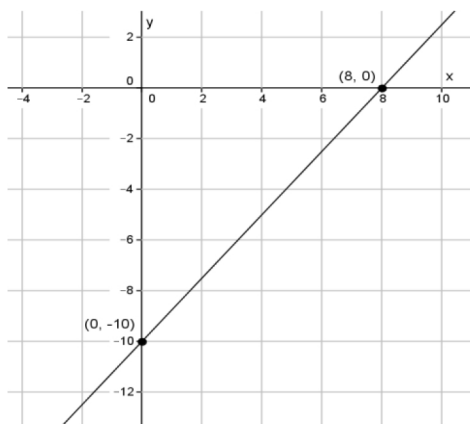
1. Graph the equation: $y = -6x + 12$.

2. Graph the equation: $9x + 3y = 18$.

3. Graph the equation: $y = 4x + 2$.

4. Graph the equation: $y = -\dfrac{5}{7}x + 4$.

5. Graph the equation: $\dfrac{3}{4}x + y = 8$.

6. Graph the equation: $2x - 4y = 12$.

7. Graph the equation: $y = 3$. What is the slope of the graph of this line?

8. Graph the equation: $x = -4$. What is the slope of the graph of this line?

9. Is the graph of $4x + 5y = \dfrac{3}{7}$ a line? Explain.

10. Is the graph of $6x^2 - 2y = 7$ a line? Explain.

3. What can you conclude about the equations $y = \frac{5}{4}x - 10$ and $5x - 4y = 40$?

1. Graph the equation $y = \frac{5}{4}x - 10$ using the y-intercept and slope.

2. Graph the equation $5x - 4y = 40$ using intercepts.

3. What can you conclude about the equations $y = \frac{5}{4}x - 10$ and $5x - 4y = 40$?

   Since the points $(0, -10)$, $(4, -5)$, and $(8, 0)$ are common to both graphs, then the lines must be the same. There is only one line that can pass through two points. If you transform the equation $y = \frac{5}{4}x - 10$ so that it is in standard form, it is the equation $5x - 4y = 40$.

Now that students know the graph of a linear equation is a line, students practice graphing linear equations in two variables using an appropriate method. Students need graph paper to complete the Problem Set.

1. **Graph the equation:** $y = -6x + 12.$
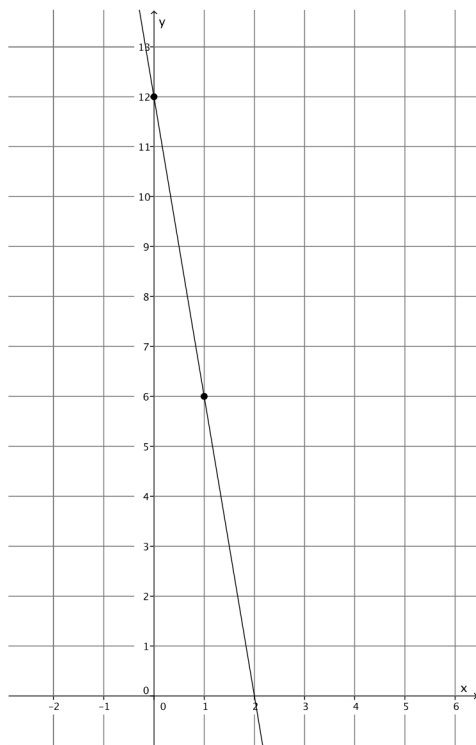
2. **Graph the equation:** $9x + 3y = 18.$
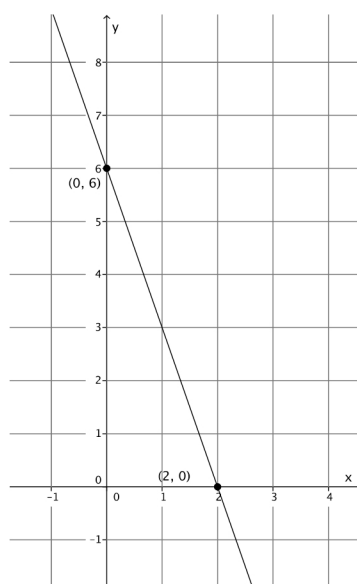
$$9(0) + 3y = 18$$
$$3y = 18$$
$$y = 6$$

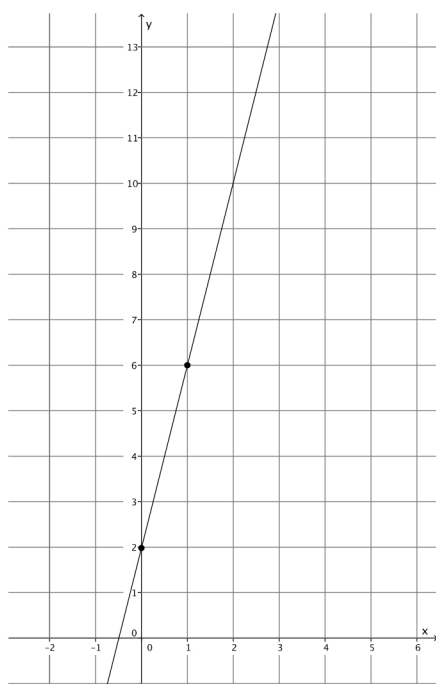*The y-intercept is* $(0, 6).$

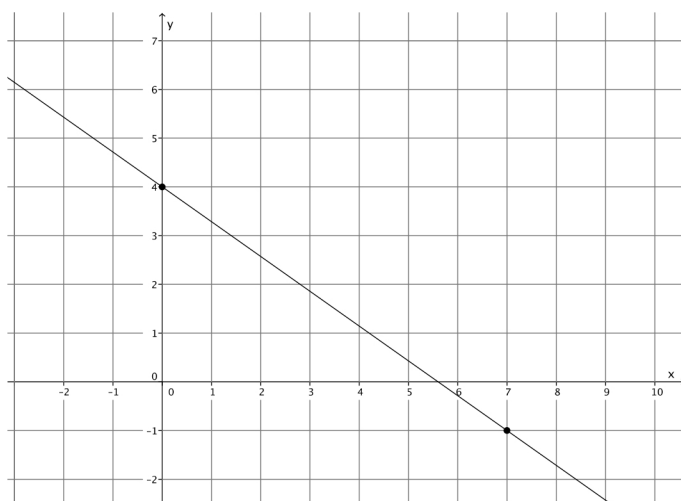$$9x + 3(0) = 18$$
$$9x = 18$$
$$x = 2$$

The x-intercept is $(2, 0).$

3. Graph the equation: $y = 4x + 2$.
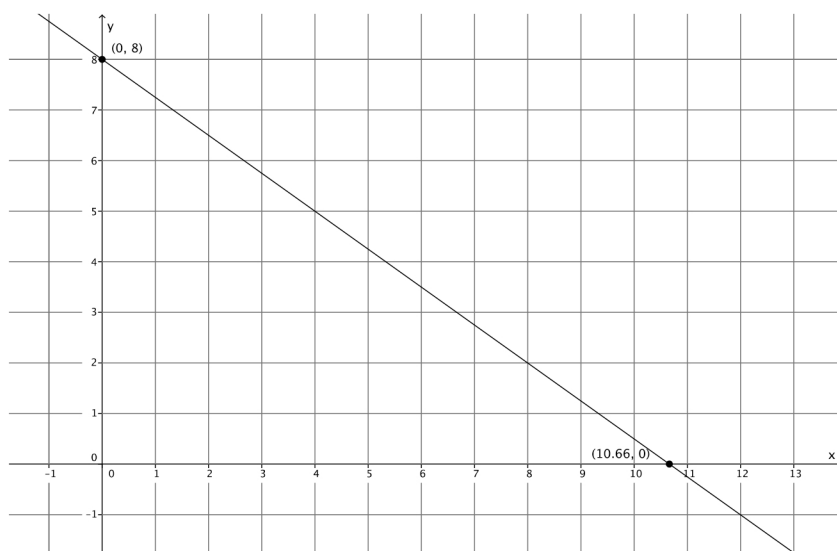
4. Graph the equation: $y = -\dfrac{5}{7}x + 4$.

5. Graph the equation: $\frac{3}{4}x + y = 8.$

$$\frac{3}{4}(0) + y = 8$$
$$y = 8$$

The y-intercept is $(0, 8)$*.*

$$\frac{3}{4}x + 0 = 8$$
$$\frac{3}{4}x = 8$$
$$x = \frac{32}{3}$$

The x-intercept is $\left(\frac{32}{3}, 0\right)$*.*

6. Graph the equation: $2x - 4y = 12.$

$$2(0) - 4y = 12$$
$$-4y = 12$$
$$y = -3$$

The y-intercept is $(0, -3)$*.*

$$2x - 4(0) = 12$$
$$2x = 12$$
$$x = 6$$
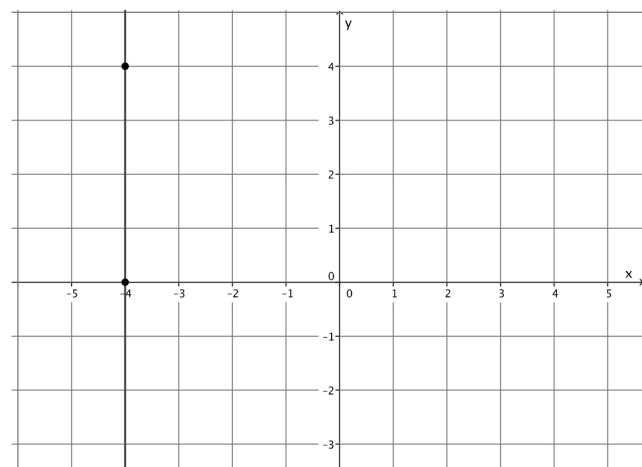
The x-intercept is $(6, 0)$*.*
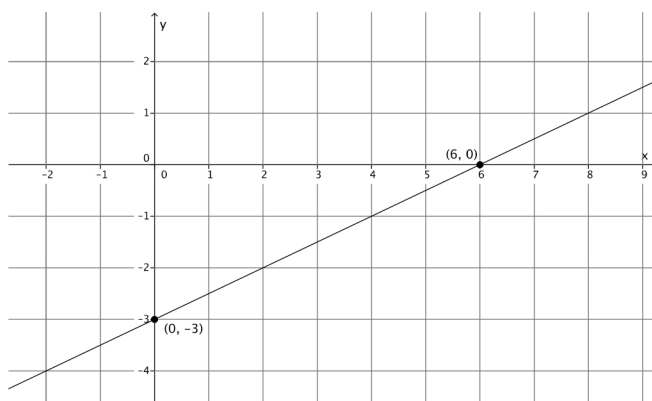
7. Graph the equation: $y = 3$. What is the slope of the graph of this line?

The slope of this line is zero.
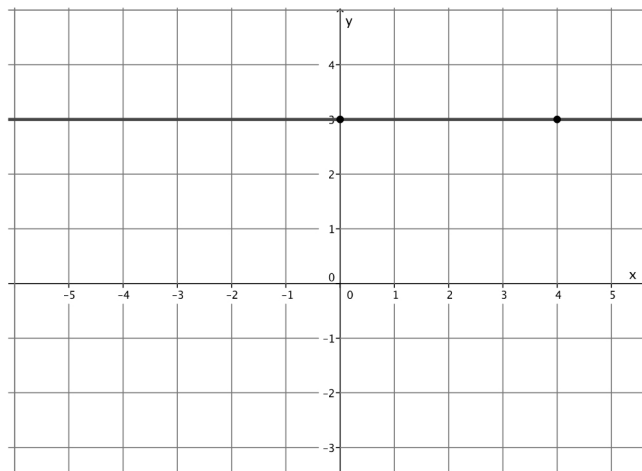
8. Graph the equation: $x = -4$. What is the slope of the graph of this line?

The slope of this line is undefined.

9. Is the graph of $4x + 5y = \frac{3}{7}$ a line? Explain.

Yes, the graph of $4x + 5y = \frac{3}{7}$ is a line because it is a linear equation comprised of linear expressions on both side of the equal sign.

10. Is the graph of $6x^2 - 2y = 7$ a line? Explain.

Maybe. The equation $6x^2 - 2y = 7$ is not a linear equation because the expression on the left side of the equal sign is not a linear expression. If this were a linear equation, then I would be sure that it graphs as a line, but because it is not, I am not sure what the graph of this equation would look like.