

Algebra Comprehensive

October 10, 2011

Today is an A day!



Warm-up: $m = \frac{y_2 - y_1}{x_2 - x_1}$

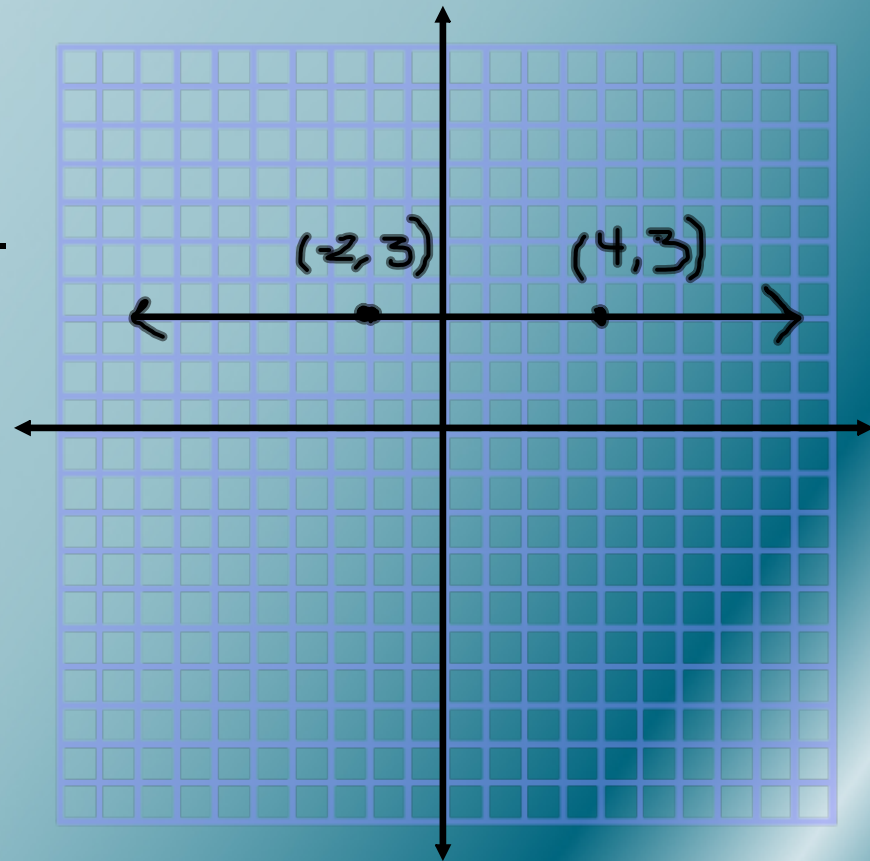
Find the slope of the line that passes through (-5, 6) and (0, 8).

$$\frac{8 - 6}{0 - (-5)} = \frac{2}{5}$$

Find the slope of the line shown.

$$m = 0$$

$$\frac{0}{6} = 0$$



Identify the ^mslope and ^by-intercept of the line with the given equation.

$$y = mx + b$$

a.) $y = 3x + 4$

$$m = 3 \text{ or } \frac{3}{1} \quad b = 4$$

$Ax + By = c$ Standard Form

b.) $3x + y = 2$ (Notice a problem with this equation?)

$$\begin{array}{r}
 \cancel{3x} + y = 2 \\
 -3x \\
 \hline
 y = -3x + 2
 \end{array}$$

$$\begin{array}{l}
 m = -3 \text{ or } -\frac{3}{1} \\
 b = 2
 \end{array}$$

Inverse

+		-
÷		x
√x		x ²

Rewrite the equations so they are in slope-intercept form.

a.) $3x - 3y = 12$

$$y = x - 4$$

$$\begin{array}{l} 3x - 3y = 12 \\ -3x \quad -3x \\ \hline -3y = -3x + 12 \\ -3 \quad -3 \\ \hline y = x - 4 \end{array}$$

b.) $x + 4y = 6$

$$\begin{array}{l} x + 4y = 6 \\ -x \quad -x \\ \hline 4y = -x + 6 \\ \frac{4y}{4} = \frac{-x + 6}{4} \\ y = -\frac{1}{4}x + 1.5 \end{array}$$

c.) $2x + y = 3$

$$y = -2x + 3$$

Graph the previous three equations on a coordinate plane.

$$\frac{-2}{-1} = 2$$

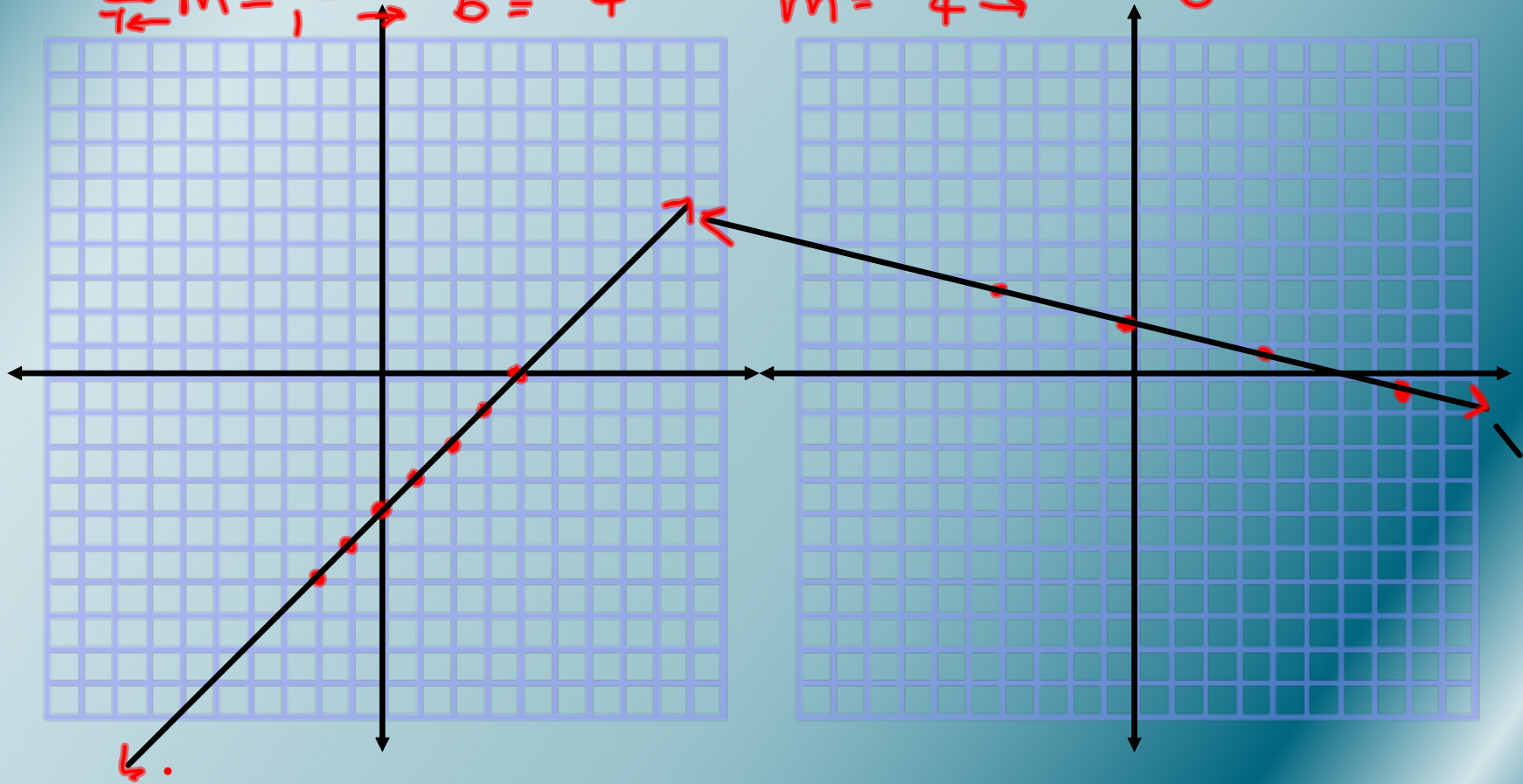
rise
run

$$y = x - 4 \quad \textcircled{1}$$

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

$$y = -\frac{1}{4}x + 1.5$$

$m = -\frac{1}{4}$ $b = 1.5$



Changing Slopes:

To get from ~~one~~^{one} floor to another at a library, you can take either the stairs or the escalator. You can climb the stairs at a rate of 1.75 feet per second, and the escalator rises at a rate of 2 feet per second. You have to travel a vertical distance of 28 feet. The equations model the vertical distance d (in feet) you have left to travel after t seconds.

$$\text{Stairs: } d = -1.75t + 28$$

$$\text{Escalator: } d = -2t + 28$$

- a.) Graph the equations in the same coordinate plane.
- b.) How much time do you save by taking the escalator?

Stairs $d = \frac{-1.75t + 28}{1}$

$$0 = \frac{-1.75t + 28}{1} - 28$$

$$\frac{-28}{-1.75} = \frac{-1.75t}{-1.75}$$

$$16 = t$$

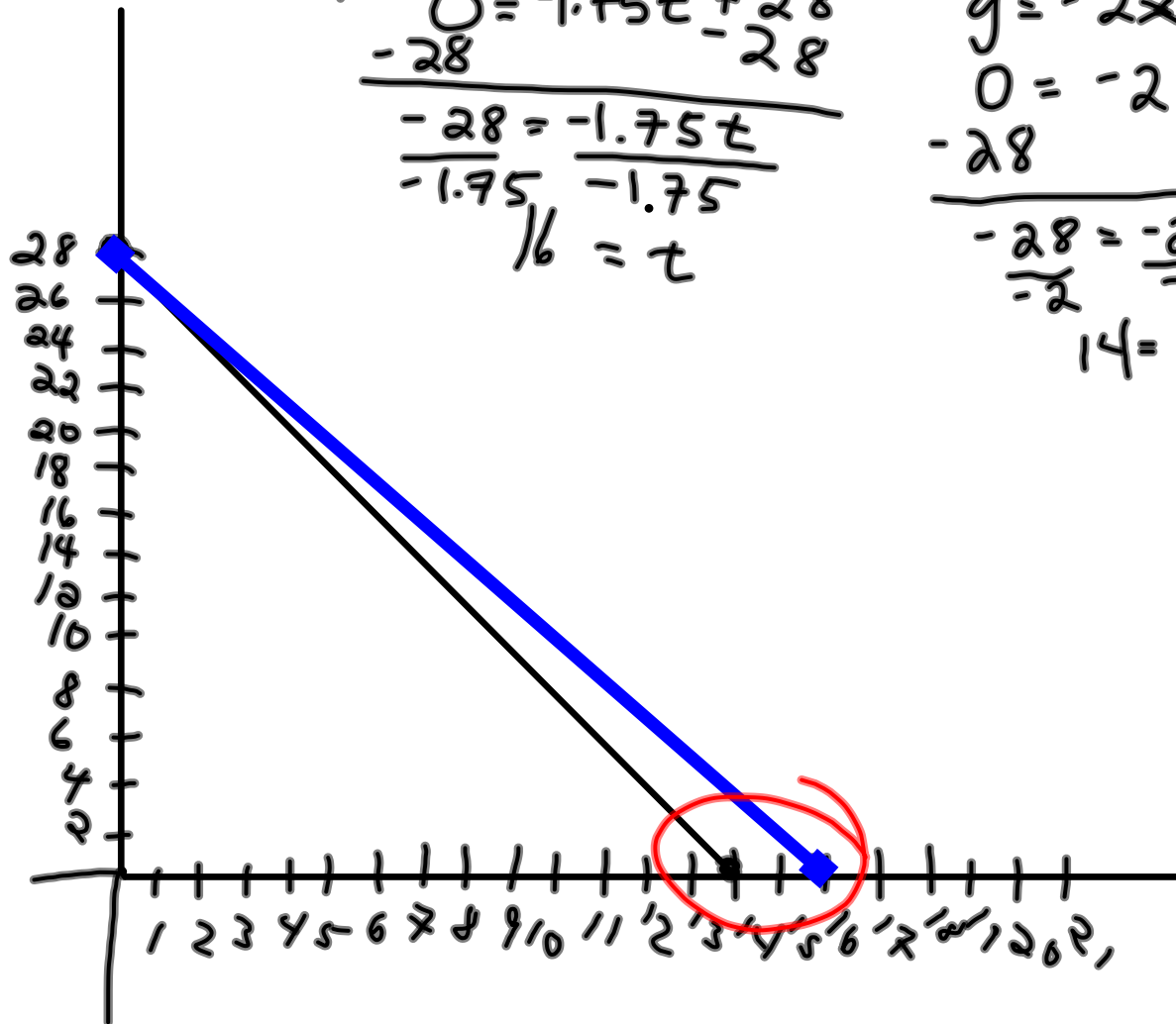
Escalator

$$y = -2x + 28$$

$$0 = \frac{-2x + 28}{1} - 28$$

$$\frac{-28}{-2} = \frac{-2x}{-2}$$

$$14 = x$$



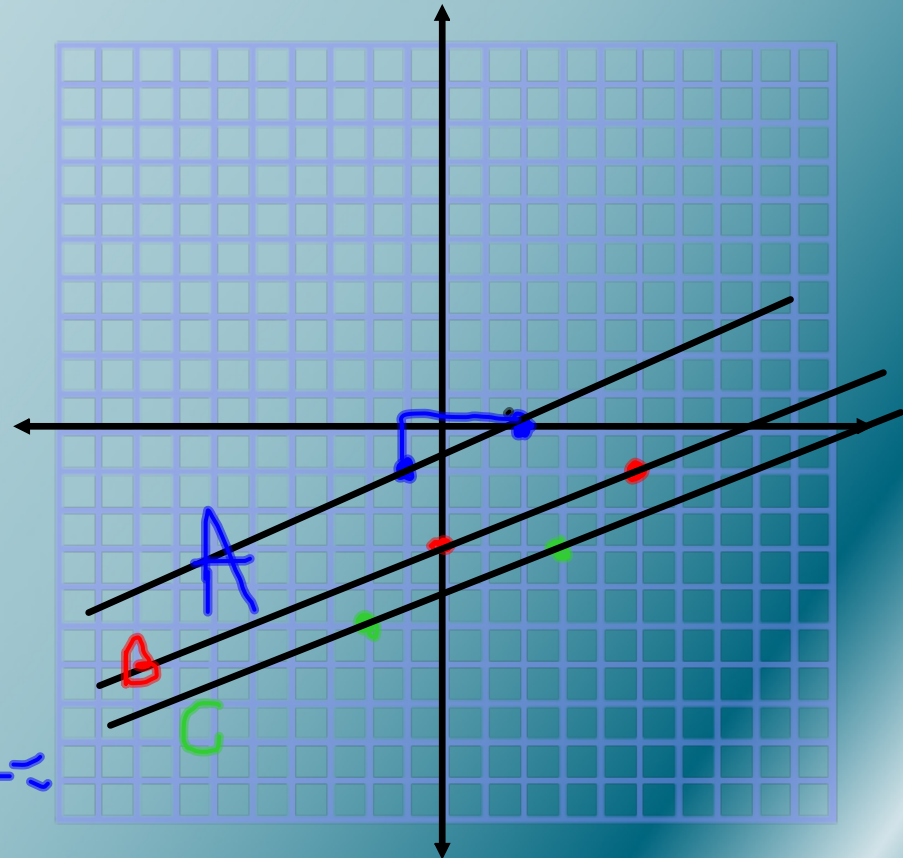
Slopes of Parallel Lines:

Find the slope of each line and determine which lines are parallel.

$$A: (-1, -1), (2, 0)$$
$$\frac{0 - (-1)}{2 - (-1)} = \frac{1}{3}$$

$$B: (0, -3), (5, -1)$$
$$\frac{-1 - (-3)}{5 - 0} = \frac{2}{5}$$

$$C: (-2, -5), (3, -3)$$
$$\frac{-3 - (-5)}{3 - (-2)} = \frac{2}{5}$$



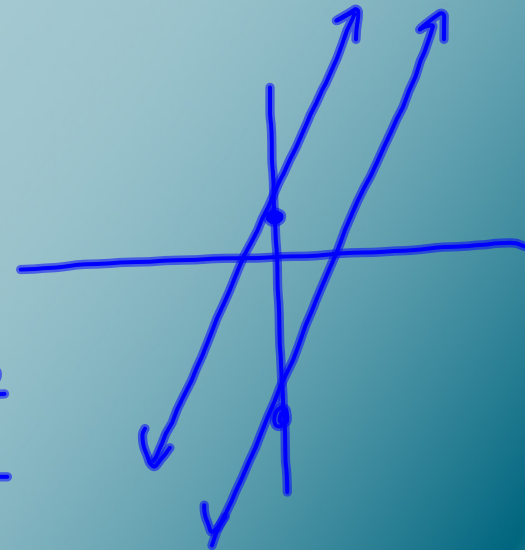
What do we notice about parallel slopes?

Symbol \parallel

$B \parallel C$

- ① Slopes are the same
- ② y -intercepts are different

$$y = 6x + 2$$
$$y = 6x - 8$$



Homework:

Pgs. 247-250

4, 13, 15, 25, 30, 35, 40, 42, 44

