Warm Up

1) Determine the slope of each line

$$m = \frac{rise}{run} \quad \frac{+2}{+4} = \frac{1}{2} = 0.5$$

$$m = \frac{rise}{run} = \frac{-7}{+9} = -\frac{7}{9}$$

Homework

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Questions: 5,6,8,9
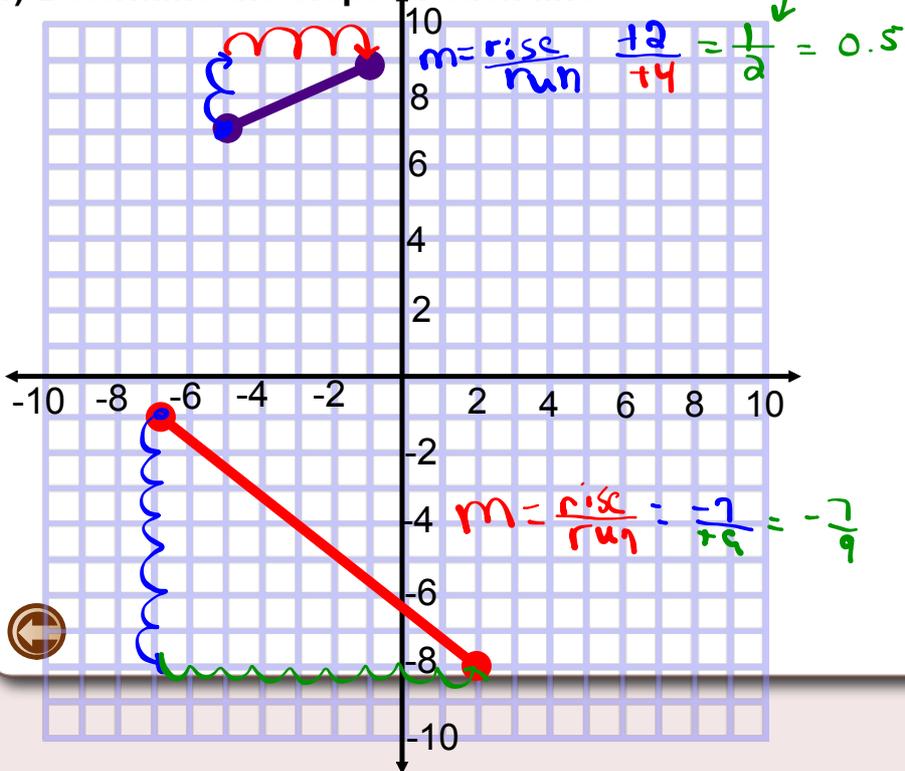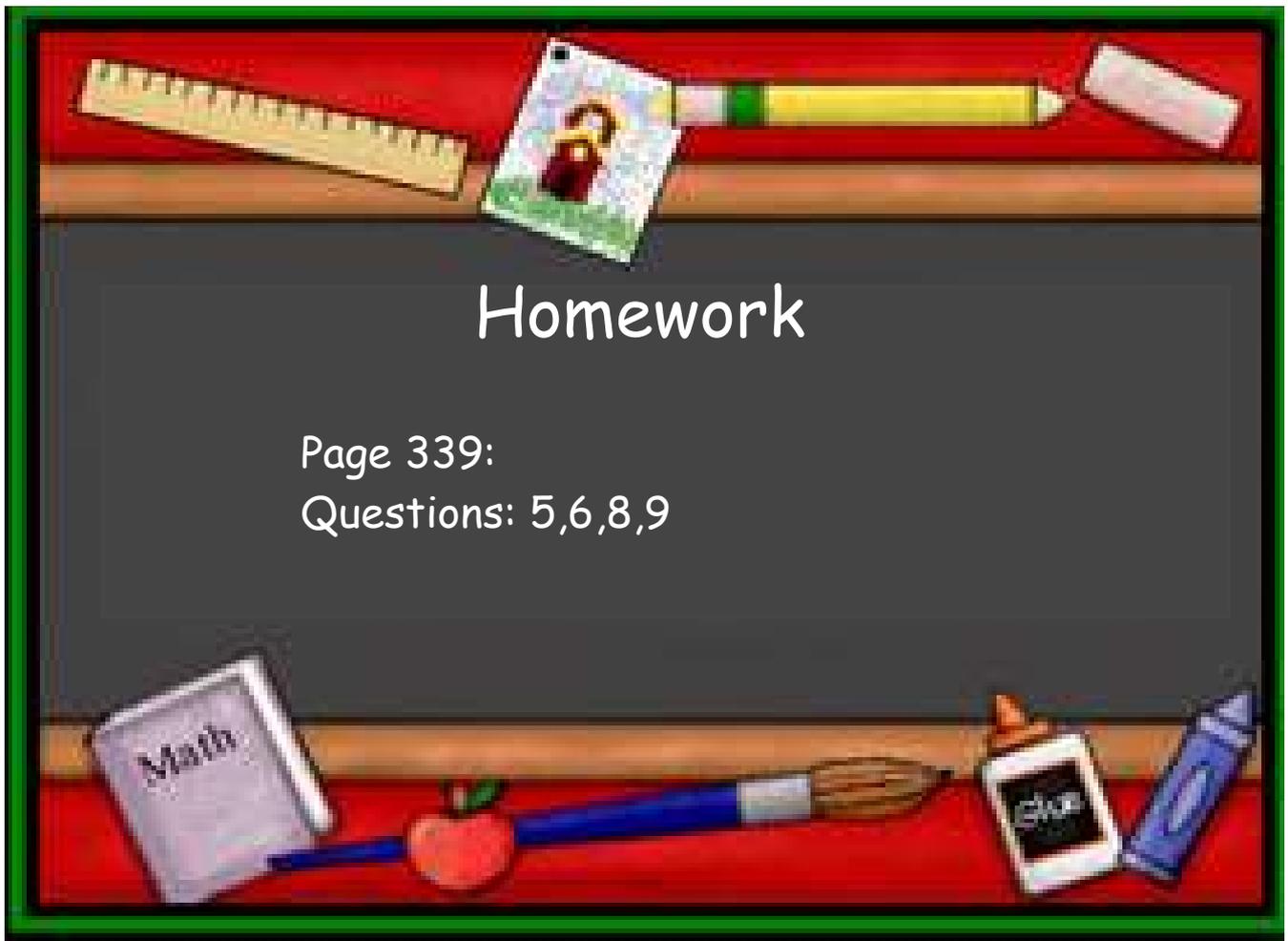
Calculate the slope.

$x_1 \; y_1 \quad x_2 \; y_2$

1. (3,5) (2,8)

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

$$= \frac{8 - 5}{2 - 3}$$

$$= \frac{3}{-1}$$

$$= -3$$

$x_1 \; y_1 \quad x_2 \; y_2$

2. (-9,-2) (7,3)

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

$$= \frac{(3) - (-2)}{(7) - (-9)}$$

$$= \frac{3 + +2}{7 + +9}$$

$$= \frac{5}{16}$$

← watch signs

Integer Rule
add opposite for Subtract

$$(-3) \overset{-}{\underset{\text{add}}{\uparrow}} (\underset{\text{opp}}{\overset{-}{\uparrow}} 5)$$

$$(-3) + (+5)$$

$$+2$$

$$(7) \overset{-}{\underset{\text{add}}{\uparrow}} (\underset{\text{opp}}{\uparrow} 2)$$

$$(7) + (-2)$$

$$5$$

Example 2   Drawing a Line Segment with a Given Slope

Draw a line segment with each given slope.

pick y intercept
to be 1

going to use
y-intercept of 0

$\frac{-7}{-5} =$ a) $\frac{7}{5}$ rise
run

b) $-\frac{3}{8}$ $\frac{rise}{run} = \frac{-3}{8}$ or $\frac{3}{-8}$
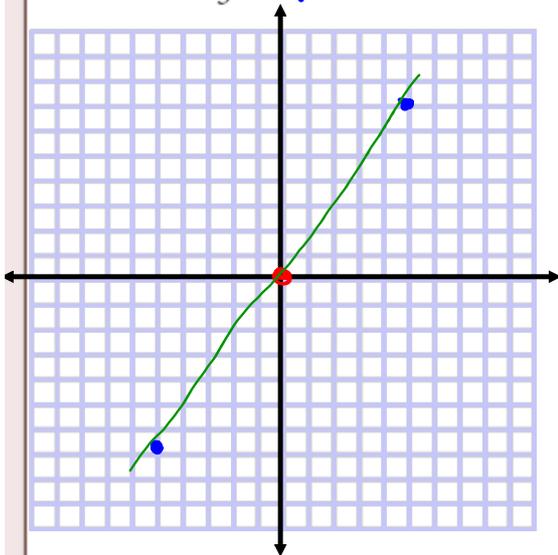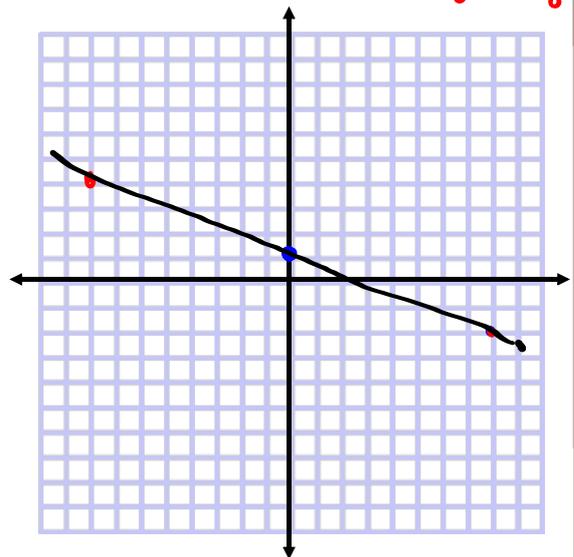
$$y = \frac{1}{2}x - 3$$

Intercept
i) let $x = 0$
ii) let $y = 0$

let $x = 0$
this finds
y-intercept

2. Draw a line segment with each slope.

a) $\dfrac{4}{9}$ **b)** $-\dfrac{8}{3}$
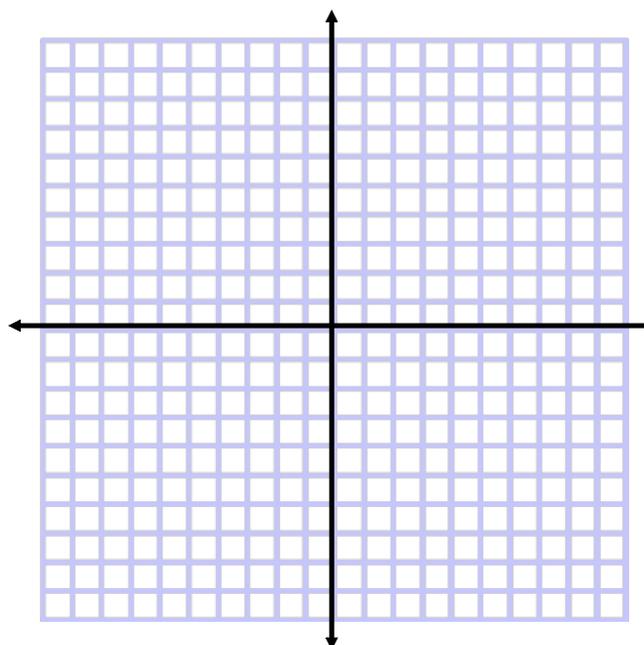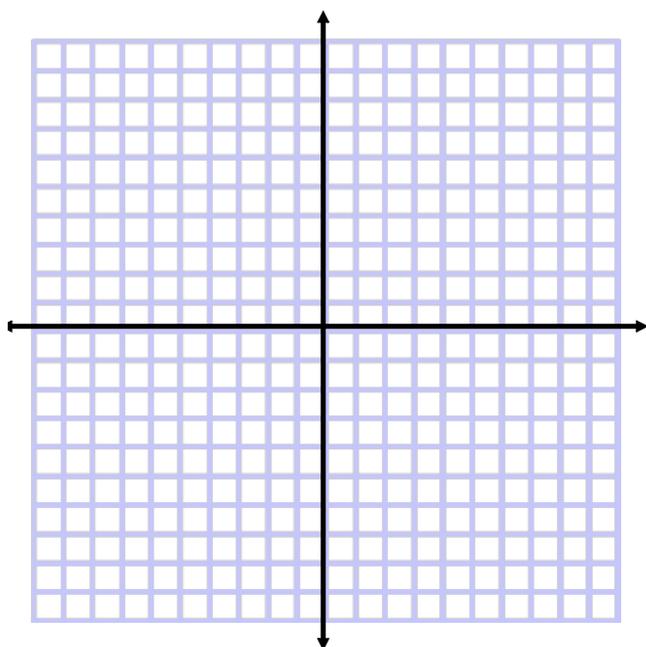
Determine the slope of each of the following lines:

(a)

(-2,0)   (0,3)

(b)

(-4,4)   y-intercept (0,3)

rise -1   run Right +4
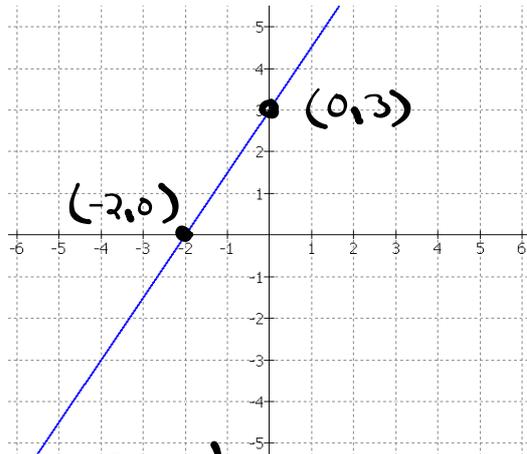
See graph

Which ordered pairs should we use to make our calculation?

$slope = \dfrac{\Delta y}{\Delta x}$ $\dfrac{rise}{run}$ $\dfrac{+3}{2}$

$m = \dfrac{y_2 - y_1}{x_2 - x_1}$ $\dfrac{3 - 0}{0 - (-2)}$

$= \dfrac{3}{2}$ y-intercept $= +3$

Equation of line

$y = mx + b$

Slope   y-intercept

$y = \dfrac{3}{2}x + 3$
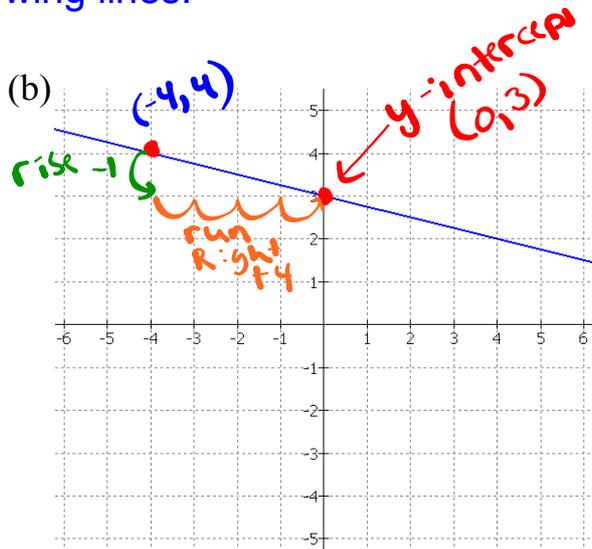
$slope = \dfrac{\Delta y}{\Delta x}$ $\dfrac{rise}{run} = \dfrac{-1}{+4}$

$m = \dfrac{y_2 - y_1}{x_2 - x_1}$

$= \dfrac{3 - 4}{0 - (-4)}$

$= \dfrac{-1}{4}$

y-intercept $\Rightarrow +3$

$y = mx + b$

$y = \dfrac{-1}{4}x + 3$

Slope - intercept Equation

Given Slope find rise or run

Slope   Fill into equation

1) If m = -3 and the run = 5, what would the rise equal to?

$$Slope = \frac{rise}{run}$$

let x represent rise

$$-3 = \frac{x}{5}$$

Solve for the unknown

$$5 \cdot -3 = \frac{x}{5} \cdot 5$$

$$\boxed{-15 = x}$$

So Rise is -15

Slope

2) If m = 8 and the rise= 24, what would the run equal to?

$$Slope = \frac{rise}{run}$$

$$8 = \frac{24}{run}$$

let run be represented by x

$$x \cdot 8 = \frac{24}{x} \cdot x$$ ← x on bottom so 1st step is to bring it to top

$$8x = 24$$

Now solve for x

$$\frac{8x}{8} = \frac{24}{8}$$

$$\boxed{x = 3}$$

Run has to be 3

Homework

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Questions:

11(a,b), ,13(i, iii), 15(a,b), 17, 23(a,c), 26(a,b,c,d)

$y = mx + b$
$y = \_\, x + \_$

(determine the equation of line first)

23)

a) $m = \frac{4}{1} \frac{rise}{run}$

c) $m = \frac{-1}{3} \frac{rise}{r}$

Piper

Hi
Peyton

Peyton $m = \frac{-1}{3}$ Gillespie

Julie