Chapter 13 practice problems

Find the slope of this line.

$$\frac{rise}{run}$$

$$= \frac{1}{2}$$
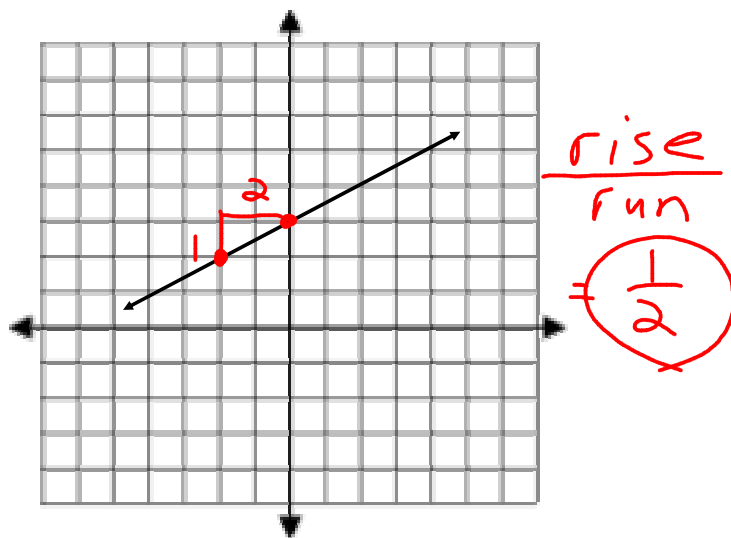
Find the slope of a line that contains the points:

(-1, 7) and (5, -2)

$$\frac{-2 - 7}{5 - -1}$$

$$= \frac{-9}{6}$$

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

Find the slope of a line that is parallel to this equation:

6x + 2y = 10

parallel = same slope

$$2y = -6x + 10$$

$$y = -3x + 5$$

$$m = -3$$

Find the slope of a line that is perpendicular to the line with this equation:

7x + 3y = 29

$$perp = opp \; reciprocal \; slope$$

$$3y = -7x + 29$$

$$y = -\frac{7}{3}x + \frac{29}{3}$$

$$-\frac{7}{3} \Rightarrow opposite \; reciprocal$$

$$= \frac{3}{7}$$

If you are given these points: (4, 1) and (8, 9)
Find the following:

The distance between these points

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \Rightarrow d = \sqrt{80}$$

$$d = \sqrt{4^2 + 8^2}$$

$$d = \sqrt{16}\sqrt{5}$$

$$d = 4\sqrt{5}$$

The midpoint of a segment with these as endpoints.

$$Midpoint = \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}$$

4,1   8,9

$$= \frac{12}{2}, \frac{10}{2}$$

$$= 6, 5$$

The equation of a line that contains these points (in slope-intercept form)

$$y = mx + b$$

$$y = 2x - 7$$

$$1 = 2(4) + b$$

$$1 = 8 + b$$

$$-7 = b$$

2 lines have the equations shown below. At what point will these lines intersect?

$$4x + 2y = 2$$
$$8x + 4y = 4$$
$$3x - 4y = -37$$

$$11x = -33$$
$$x = -3$$

$$-12 + 2y = 2$$
$$2y = 14$$
$$y = 7$$
$$(-3, 7)$$

Quadrilateral GEOM has the following points:

G (2, 1)
E (4, 4)
O (10, 0)
M (8, -3)

slopes
$$GE = \frac{3}{2}$$ → perpendicular
$$EO = \frac{-2}{3}$$
$$OM = \frac{3}{2}$$ → perpendicular
$$MG = \frac{-2}{3}$$

Explain why this quadrilateral must be a rectangle.

Consecutive sides are perpendicular.