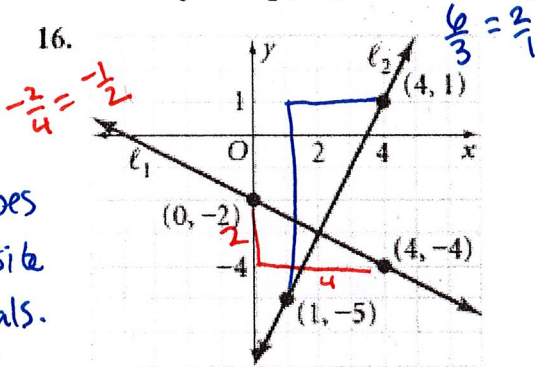


Practice: Determine if lines are perpendicular

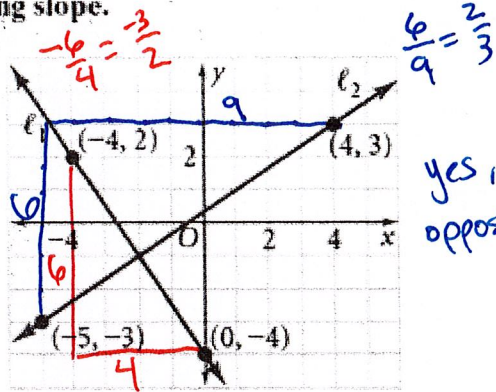
Are lines ℓ_1 and ℓ_2 perpendicular? Explain using slope.

16.



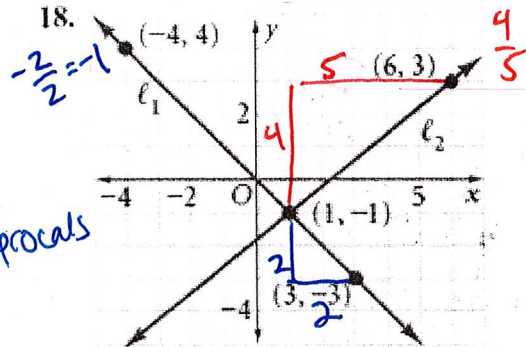
Yes, slopes are opposite reciprocals.

17.



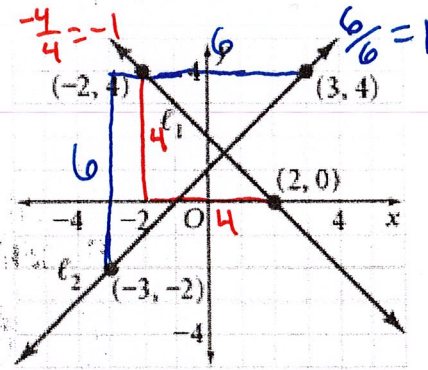
Yes, slopes are opposite reciprocals

18.



No, slopes are not opposite reciprocals

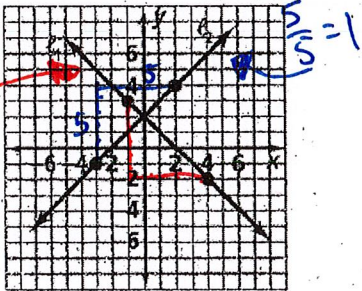
19.



Yes, slopes are opposite reciprocals.

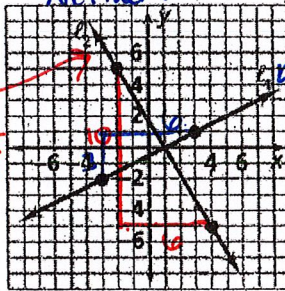
Are lines ℓ_1 and ℓ_2 parallel, perpendicular, or neither? Explain. Slopes are not equal or opposite reciprocals.

9.



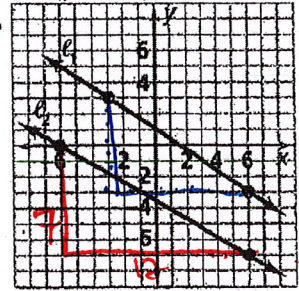
perp., slopes are opposite reciprocals

10.



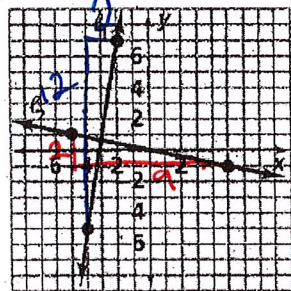
Neither

11.



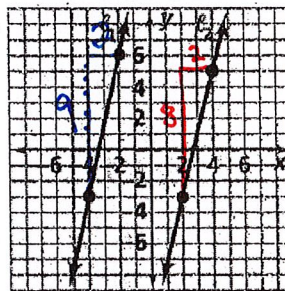
Neither

12.



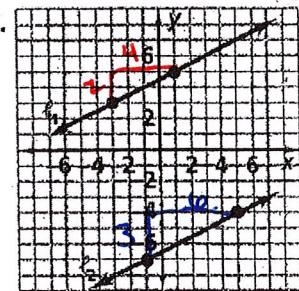
Neither, slopes are not the same or opposite reciprocals.

13.



Neither, slopes are not the same or opposite reciprocals.

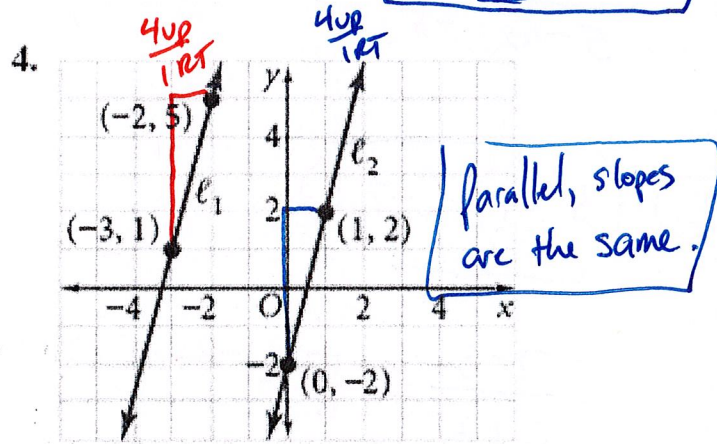
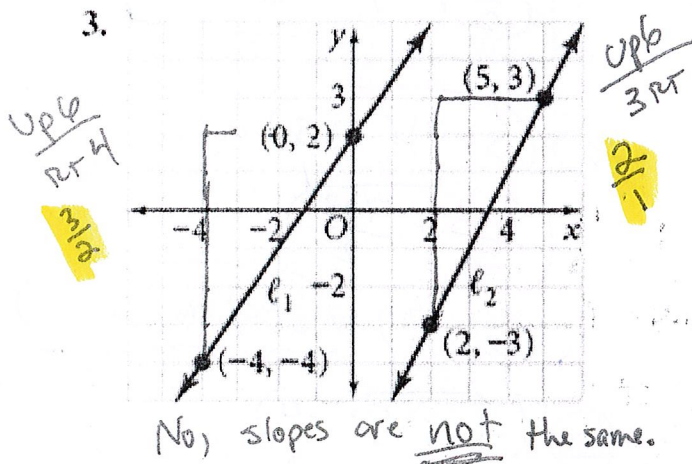
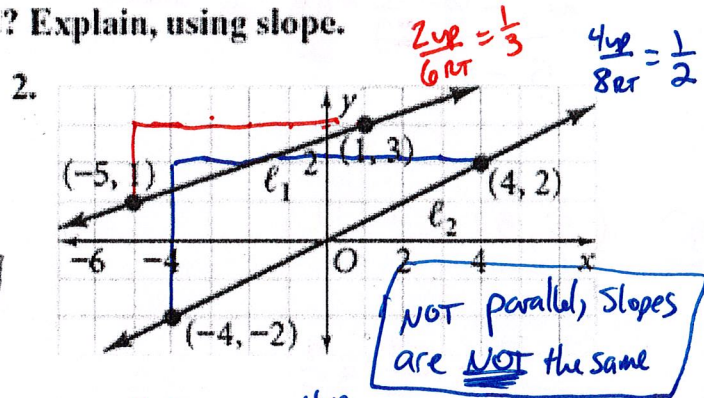
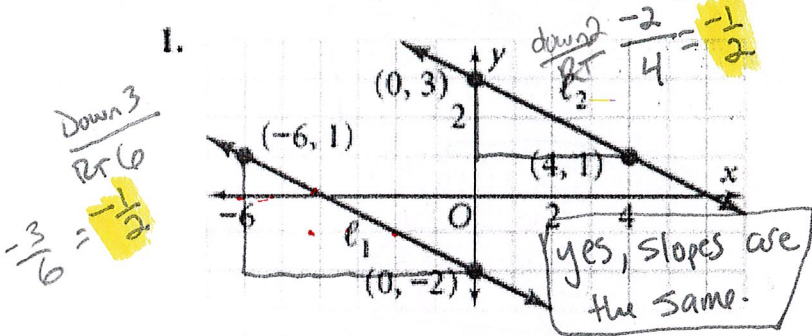
14.



Yes, parallel, slopes are the same.

Practice: Determining if Lines are Parallel

In Exercises 1-5, are lines ℓ_1 and ℓ_2 parallel? Explain, using slope.



5. Line ℓ_1 contains $A(-3, 6)$ and $B(2, 6)$, and line ℓ_2 contains $C(0, 0)$ and $D(7, 0)$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{6 - 6}{2 - (-3)} = \frac{0}{5} = 0$$

Horizontal Line

$$\frac{0 - 0}{0 - 7} = \frac{0}{-7} = 0$$

Horizontal Line.

They are parallel because slopes are the same.

Are the lines parallel? Explain.

6. $y = 2x + 5$
 $y = 2x$
 ↓
 Same slopes, parallel lines

7. $y = \frac{3}{4}x - 10$
 $y = \frac{3}{4}x + 2$
 ↓
 same, parallel!

Find the Slope! $m = \frac{y-y}{x-x}$

A $(5,7)$ $(3,6)$

$$\frac{7-6}{5-3} = \frac{1}{2}$$

B $(5,3)$ $(10,7)$

$$\frac{3-7}{5-10} = \frac{-4}{-5} = \frac{4}{5}$$

C $(3,-7)$ $(-2,3)$

$$\frac{-7-3}{3+2} = \frac{-10}{5} = -2$$

D $(-6,8)$ $(2,-4)$

$$\frac{8+4}{-6-2} = \frac{12}{-8} = -\frac{3}{2}$$

Find the midpoint $\left(\frac{x+x}{2}, \frac{y+y}{2}\right)$

A $(5,7)$ $(3,6)$

$$\left(\frac{5+3}{2}, \frac{7+6}{2}\right)$$
$$(4, 6.5)$$

B $(5,3)$ $(10,7)$

$$\left(\frac{5+10}{2}, \frac{3+7}{2}\right)$$

$$\left(\frac{15}{2}, 5\right) \text{ or } (7.5, 5)$$

C $(3,-7)$ $(-2,3)$

$$\left(\frac{3-2}{2}, \frac{-7+3}{2}\right)$$

$$\left(\frac{1}{2}, -2\right) \text{ or } (0.5, -2)$$

D $(-6,8)$ $(2,-4)$

$$\left(\frac{-6+2}{2}, \frac{8-4}{2}\right)$$

$$\left(\frac{-4}{2}, \frac{4}{2}\right)$$

$$(-2, 2)$$

Name _____ Day# _____

Practice: Slopes through 2 points

Q4: Write the equation in slope-intercept form of the line that is *perpendicular* to the graph of each equation and passes through the given point.

1. $y = -5x + 1$; (2, -1)

2. $y = 2x - 3$; (-5, 3)

3. $y = -4x - 2$; (4, -4)

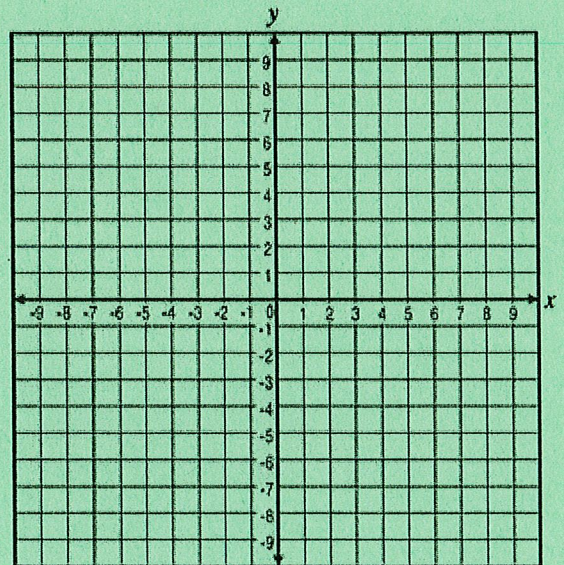
Q5: Are the lines L1 and L2 passing through the given pairs of points *parallel*, *perpendicular* or *neither parallel nor perpendicular*?

a. L1: (1, 2), (3, 1) and L2: (0, -1), (2, 0)

$$m = \frac{y-y_1}{x-x_1}$$
$$\frac{2-1}{1-3}$$
$$= \frac{1}{-2}$$
$$= -\frac{1}{2}$$

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

Neither, slopes are not the same, or opposite reciprocals.



b. L1: (0, 3), (3, 1) and L2: (-1, 4), (-7, -5)

$$\frac{3-1}{0-3}$$

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

$$\frac{4+5}{-1+7}$$

$$\frac{9}{6}$$
$$= \frac{3}{2}$$

Perpendicular, slopes are opposite reciprocals.

