

**WORKSHEET #1 – Slopes of Parallel & Perpendicular Lines**

**What is the slope of the following equations?** (Hint: Translate into Slope-Intercept Form to ID Slope)

1)  $y = -6x - 2$

4)  $7x - 2y = 3$

5)  $2y + 5x = 2$

2)  $x + 4y = 12$

3)  $y = 2 - \frac{1}{3}x$

**PARALLEL LINES:**

EQUATION	SLOPE	PARALLEL SLOPE	PERPENDICULAR SLOPE
$y = -6x - 2$			
$x + 4y = 12$			
$y = 2 - \frac{1}{3}x$			
$7x - 2y = 3$			
$2y + 5x = 2$			

**PERPENDICULAR LINES**

*When questions ask you about parallel or perpendicular lines, you need to focus only on the **SLOPE!***

**Write a slope that is PARALLEL to each line.**

1.  $y = -5x + 3$

2.  $y = \frac{2}{3}x + 7$

3.  $3x + 4y = 9$

4.  $-x + 2y = -10$

**Write an equation in slope intercept form of a PARALLEL line to the graph of the given linear function and passes through the given point.**

5.  $y = -4x + 8, (1, 3)$

6.  $y = 6x - 4, (2, 3)$

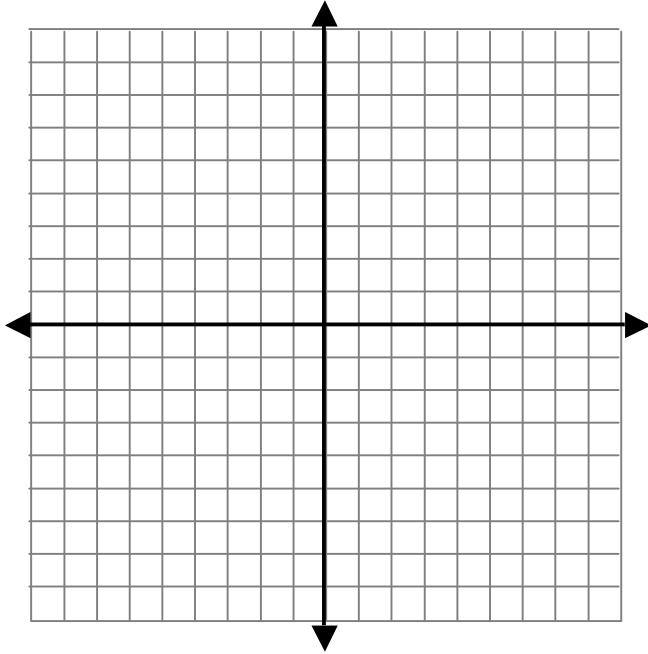
7.  $y = \frac{2}{3}x - 3, (-3, 1)$

8.  $y = 3x + 4, (5, 6)$

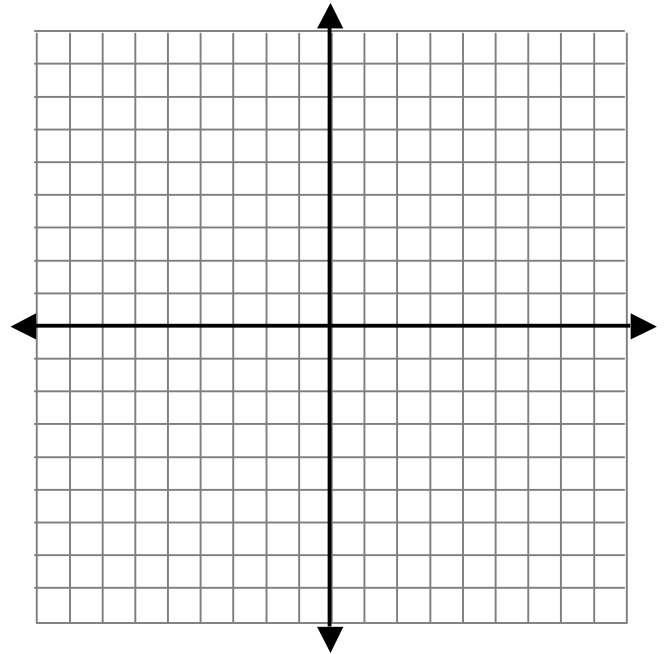
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9. Determine if figure ABCD is a parallelogram with vertices:  $(-3, 4)$   $(6, 4)$   $(-5, -1)$  and  $(4, -1)$



10. Determine if figure EFGH is a parallelogram if the vertices are  $(0, 4)$   $(-7, -3)$   $(-2, -5)$   $(4, -1)$



Write an equation for the line that is PARALLEL to the given line and contains the given point.

11.  $y = \frac{4}{3}x - 7$ ;  $(7, 2)$

12.  $y = x - 2$ ;  $(3, -1)$

13.  $-3x + y = 8$ ;  $(-1, 5)$

14.  $y = \frac{-1}{2}x + 3$ ;  $(-4, 7)$

15.  $y = \frac{1}{4}x + 3$ ;  $(8, -6)$

16.  $y = \frac{5}{2}x - 1$ ;  $(-2, 8)$

The slope of perpendicular lines are: \_\_\_\_\_.

Write a slope that is PERPENDICULAR to each equation.

1.  $y = 3x + 4$

2.  $6x + 3y = 1$

3.  $y = \frac{-4}{3}x + 11$

4.  $y - 7x = 0$

Write an equation in slope intercept form of the line that is PERPENDICULAR to the graph of the given equation and passes through the given point.

5.  $y = \frac{1}{3}x - 2$ ,  $(-4, 2)$

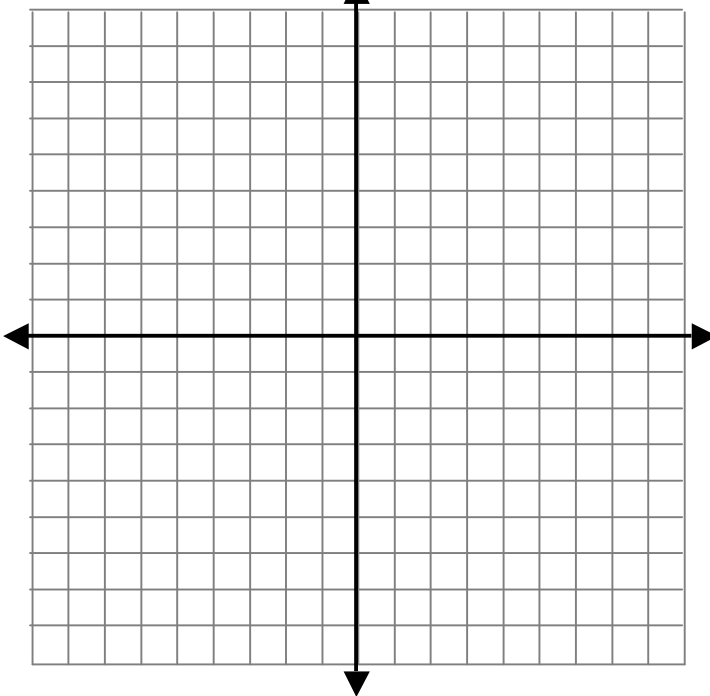
6.  $y = 2x + 6$ ,  $(0, 0)$

7.  $2x + 3y = 2$ ,  $(3, 0)$

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

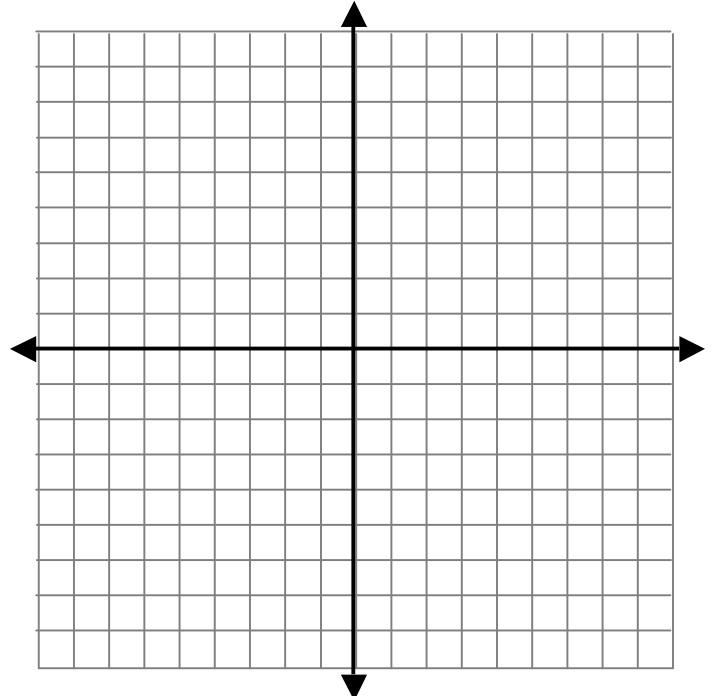
9. Determine if the following is a rectangle:

$(-3, -3)$   $(0, -1)$   $(2, -4)$   $(-1, -6)$



10. Determine if the following is a rectangle:

$(1, -2)$   $(2, 3)$   $(-3, 5)$   $(-2, -1)$



Write an equation for the line that is PERPENDICULAR to the given line and contains the given point.

11.  $y = \frac{4}{3}x - 7$ ; (7, 2)

12.  $y = x - 2$ ; (3, -1)

13.  $-3x + y = 8$ ; (-1, 5)

14.  $y = \frac{-1}{2}x + 3$ ; (-4, 7)

15.  $y = \frac{1}{4}x + 3$ ; (8, -6)

16.  $y = \frac{5}{2}x - 1$ ; (-2, 8)

Determine whether the graphs of the equations are parallel, perpendicular, or neither.

17.  $y = 3x + 2$  and  $y = \frac{1}{3}x + 5$

18.  $y = 8 + 5x$  and  $y = 5x - 6$

19.  $y = 8 + 3x$  and  $y = -\frac{1}{3}x - 7$

20.  $y = \frac{2}{3}x + \frac{1}{2}$  and  $y = -\frac{2}{3}x - \frac{3}{2}$

21.  $y = \frac{2}{3}x + 1$

22.  $y = \frac{1}{5}x + 2$

23.  $y = -4x + 3$

$y = -\frac{3}{2}x + 2$

$y = 5x + 1$

$4y = x - 5$

24.  $y = -\frac{3}{4}x + 5$

25.  $y = \frac{1}{2} + \frac{1}{3}x$

26.  $2y = 8 - 2x$

$4y + 3x = -3$

$2x + y = 5$

$3x + 3y = 9$

**Questions for Creating Parallel and Perpendicular Lines:**

- 1) You must know the original slope of the line you are comparing to.
- 2) You must identify if you want the parallel or perpendicular slope of the original.
- 3) You must know or be able to determine at least one point on this new line
- 4) Create the slope intercept form equation of a line with the parallel or perpendicular slope and point on the line  
( $y = mx + b$ )

**Example 1:** Write the equation of the line that passes through the point  $(-1, -2)$  and is parallel to the graph of  $y = -3x - 2$ .

**Example 2:** Write the equation of the line that passes through  $(4, -2)$  and is parallel to  $y = \frac{1}{2}x - 7$ .

**Example 3:** Write the equation of the line that passes through the point  $(-3, -2)$  and is perpendicular to the graph of  $x + 4y = 12$ .

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**Example 4:** Write the equation of the line that is perpendicular to the graph of  $y = -\frac{1}{3}x + 2$  and passes through the  $x$  - intercept of that line.

**Example 5:** Write the equation of the line that passes through the point (4, -1) and is perpendicular to the graph of  $7x - 2y = 3$ .

**Example 6:** Write the equation of the line that is parallel to  $2y + 5x = 2$  and passes through (0, 6).

**Example 7:** Write the equation of the line that is parallel to  $-4y = 8x - 6$  and passes through (-4, 3).