

**Objective:** Determine whether two lines have parallel or perpendicular slopes.

**Warm Up:**

Complete the "City Grid" Activity

Vocabulary:

**Parallel lines:**

**Perpendicular lines:**

**Examples:**

1. Determine if the lines are parallel, perpendicular or neither. Justify your answer using mathematical evidence.

a.  $y = -4x + 7$   
 $y = -4x + 2$

b.  $y = \frac{3}{2}x - 6$   
 $y = 2x - 6$

c.  $2x + y = 8$   
 $y = 2x + 2$

2. Write two equations that are perpendicular.

3. Write two equations that are parallel.

4. Write the equation of a line that is parallel to the given line and goes through the given point (recall what we know about parallel lines). Start with point-slope form and transform it to slope-intercept form.

a.  $y = 3x + 2$   
Point:  $(0, -3)$

b.  $y = -8x + 4$   
Point:  $(2, 4)$

5. Write the equation of a line that is perpendicular to the given line and goes through the given point (recall what we know about perpendicular lines). Start with point-slope form and transform it to slope-intercept form.

a.  $y = -x + 3$

Point:  $(0, -10)$

Slope: \_\_\_\_\_

b.  $y = \frac{3}{2}x - 6$

Point:  $(-1, 3)$

Slope: \_\_\_\_\_

6. Write two equations that are parallel to each other and go through the given points.

Line A:  $(2, 5)$  and  $(3, 7)$

Line B:  $(-1, 8)$

7. Write two equations that are perpendicular to each other and go through the given points.

Line A:  $(-3, 10)$  and  $(2, 15)$

Line B:  $(-1, 8)$