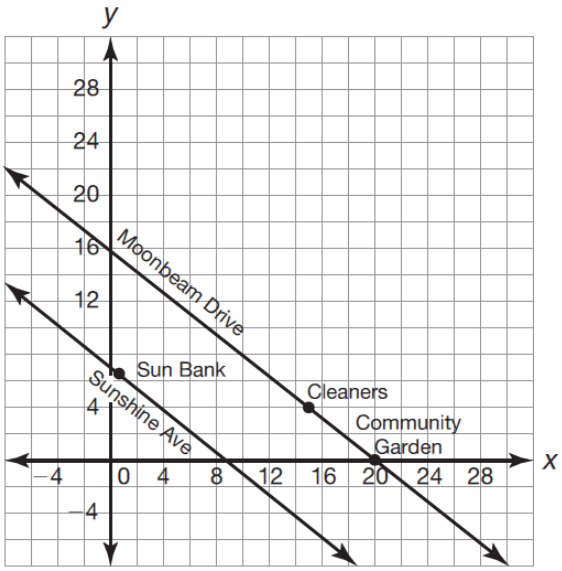
 Name: _____

1.5.D2 – Parallel & Perpendicular Lines on the Coordinate Plane

Past due on: _____ Period:_____

All work for problems 1 – 3, below, must be done on a separate sheet of paper.

Christopher is a developer and plans to build a new community development. Use the grid to help Christopher create a map for his development. Each gridline represents one block.



1. Currently there are two main roads that pass through the development and are parallel to each other: Sunshine Avenue and Moonbeam Drive.
   a. Calculate the slope of Moonbeam Drive. Show your work.
   b. Determine the slope of Sunshine Avenue. Explain your reasoning.

2. Christopher wants to build a road named, Stargazer Boulevard that will be parallel to Moonbeam Drive. On this road, he will build a new diner located 7 blocks north of the Community Garden.
   a. Identify the coordinates of the new diner and plot the diner on the grid.
   b. Determine the equation of the line that represents Stargazer Boulevard.
   c. Draw and label Stargazer Boulevard on the grid.

3. Christopher wants to build a road named Rocket Drive that connects Sun Bank to Moonbean Drive. He wants this road to be as short as possible.
   a. Write an equation for the line representing Rocket Drive. Show your work. Then draw and label Rocket Drive on the grid.
   b. What is the equation of the line representing Moonbeam Drive? Explain how you determined your answer.
   c. Calculate the point of intersection of Rocket Drive and Moonbeam Drive. Show your work.
   d. What is the distance from Sun Bank to Moonbeam Drive? Show your work.

Rewrite the linear equation in slope-intercept form, if necessary. Identify the slope of lines ℓ_1 & ℓ_2, then determine if the lines are parallel, perpendicular, coincident – they are the same line – or neither.

4. ℓ_1: $y = -2x - 3$
   ℓ_2: $2y - x - 4 = 0$

   $m_{\ell 1}$: ____ $m_{\ell 2}$: ____

5. ℓ_1: $4x + y = 1$
   ℓ_2: $y = -4x - 10$

   $m_{\ell 1}$: ____ $m_{\ell 2}$: ____

6. ℓ_1: $6x + 4y = 5$
   ℓ_2: $12x + 8y = 10$

   $m_{\ell 1}$: ____ $m_{\ell 2}$: ____

7. ℓ_1: $y = -2x - 7$
   ℓ_2: $2x + 7 + y = 0$

   $m_{\ell 1}$: ____ $m_{\ell 2}$: ____

8. ℓ_1: $y = 5x + 2$
   ℓ_2: $2 - \frac{1}{5}x = y$

   $m_{\ell 1}$: ____ $m_{\ell 2}$: ____

9. ℓ_1: $x = 5y - 2$
   ℓ_2: $2y + \frac{1}{2}x = 8$

   $m_{\ell 1}$: ____ $m_{\ell 2}$: ____

Determine the equation of a horizontal line and a vertical line that passes through the given point.

	10. $(9, -7)$	11. $(-11, -8)$	12. $(-4, 0)$
Horizontal line:	_____	_____	_____
Vertical line:	_____	_____	_____

13. Consider line *m* which passes through the points $(0, 5)$ & $(8, 9)$ and line *n* which passes through $(4, 7)$ & $(6, 3)$. Are the lines parallel, perpendicular, or neither? Explain your reasoning.

14. Write the slope-intercept form of the line passing through $(4, -3)$ parallel to $5x + 2y = -10$.

15. Write the slope-intercept form of the line passing through $(-4, -1)$ perpendicular to $4x - 3y = 6$.