Unit 4 - Lesson 21
Point Slope Form of Linear Equations

Name:
Date: $\qquad$ Period: $\qquad$

| Focus <br> Standards: | 8.EE.B.5 | Graph proportional relationships, interpreting the unit rate as the <br> slope of the graph. Compare two different proportional <br> relationships represented in different ways. For example, compare a <br> distance-time graph to a distance-time equation to determine which <br> of two moving objects has greater speed. |
| :--- | :--- | :--- |
|  | $8 . E E . B .6$ | Use similar triangles to explain why the slope $m$ is the same <br> between any two distinct points on a non-vertical line in the <br> coordinate plane; derive the equation for a line through the origin <br> and the equation for a line intercepting the vertical axis at . |

## Student Outcomes

- Students write the equation of a line given two points or the slope and a point on the line.
- Students know the traditional forms of the slope formula and slope-intercept equation.


## Example 1

Let a line $l$ be given in the coordinate plane. What linear equation is the graph of line $l$ ?


## Example 2

Let a line $l$ be given in the coordinate plane. What linear equation is the graph of line $l$ ?


## Example 3

Let a line $l$ be given in the coordinate plane. What linear equation is the graph of line $l$ ?


## Example 4

Let a line $l$ be given in the coordinate plane. What linear equation is the graph of line $l$ ?


## Exercises

1. Write the equation for the line $l$ shown in the figure.

2. Write the equation for the line $l$ shown in the figure.

3. Determine the equation of the line that goes through points $(-4,5)$ and $(2,3)$.
4. Write the equation for the line $l$ shown in the figure.

5. A line goes through the point $(8,3)$ and has slope $m=4$. Write the equation that represents the line.

## Problem Set

1. Write the equation for the line $l$ shown in the figure.

2. Write the equation for the line $l$ shown in the figure.

3. Write the equation for the line $l$ shown in the figure.

4. Triangle $A B C$ is made up of line segments formed from the intersection of lines $L_{A B}, L_{B C}$, and $L_{A C}$. Write the equations that represent the lines that make up the triangle.

5. Write the equation for the line that goes through point $(-10,8)$ with slope $m=6$.
6. Write the equation for the line that goes through point $(12,15)$ with slope $m=-2$.
7. Write the equation for the line that goes through point ( 1,1 ) with slope $m=-9$.
8. Determine the equation of the line that goes through points $(1,1)$ and $(3,7)$.
