



LESSON 9

Use Slope-Intercept Vocabulary

What You Need

- Recording Sheet

What You Do

- 1 Read the problem on the **Recording Sheet**. Think about how to solve it.
- 2 Read the paragraphs that tell how to solve the problem.
- 3 Use words from the word bank and numbers from the number bank to fill in the blanks. You can use each word or number only once. You will not use all the words or numbers.
- 4 Take turns. After you fill in a blank, the next group member fills in the next one.
- 5 When all the blanks are filled in, read the paragraphs aloud. Do they make sense?
- 6 Fix any mistakes if you need to.

KEEP IN MIND . . .

You might change your mind after you fill in some blanks. It's okay to erase!



Check Understanding

The equation $y = 20x + 60$ can be used to find the total number of pages, y , that Micah has read after reading for x hours today. Use slope-intercept vocabulary to explain how to graph the equation.



Go Further

Keisha's novel is 200 pages long. How many hours does she have to read today to finish reading the novel? Use slope-intercept vocabulary to explain.



Use Slope-Intercept Vocabulary

RECORDING SHEET

► **Keisha is reading a novel for her English class. She has already read some of the book. She starts reading again today and uses the equation $y = 25x + 50$ to find the total number of pages, y , she has read after x hours. Graph the equation.**

I can start by looking at the given _____ equation. I see that it is written as $y = mx + b$, which is in _____.

So, I know that the _____ is m , the coefficient of the variable x .

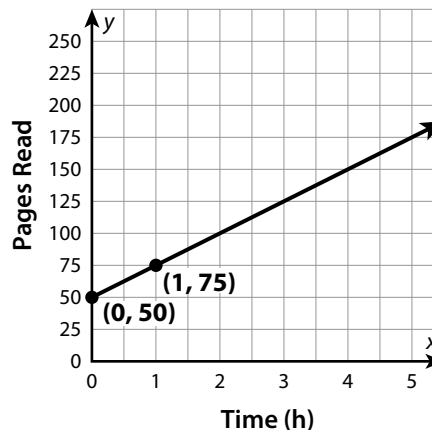
This value represents the constant rate at which Keisha reads, _____ pages per hour.

I also know that the _____ is b , the constant term. This value represents how many pages Keisha has already read, _____.

To graph the equation, I can use the y -intercept to plot a point on the _____. That point is (_____, 50).

Then I can use the slope to plot another point. The slope is the _____ over the _____, or $\frac{25}{1}$. So, for every increase of _____ in x , there is an increase of 25 in y . That helps me plot another point, (1, _____).

I can draw a _____ through those two points to graph the equation.



Word Bank

- line
- linear
- point
- rise
- run
- slope
- slope-intercept form
- x -axis
- y -axis
- y -intercept

Number Bank

- 0
- 1
- 2
- 25
- 50
- 75



LESSON 11

Write an Equation

What You Need

- Recording Sheet
- Number of Solutions Cards
- Left Side Cards

What You Do

- 1 Shuffle the **Number of Solutions Cards** and the **Left Side Cards**. Place them facedown in two piles.
- 2 Take turns. Choose a **Number of Solutions Card**. Write the number of solutions in the first empty row of the **Recording Sheet** in the *Number of Solutions* column. Choose a **Left Side Card**. Write the expression in the *Left Side* column of the same row. Return the chosen cards facedown to the bottoms of the correct piles.
- 3 Think of an expression for the right side of an equation that has the required number of solutions. Write it in the *Right Side* column of the **Recording Sheet**.
- 4 The player to your left checks your work. If the equation you wrote has the correct number of solutions, you win the round. If not, the player to your left wins the round. Write the name of the winner on the **Recording Sheet**.
- 5 Continue playing rounds so each player has the same number of turns. The player who wins the most rounds wins.

KEEP IN MIND . . .

An equation with no solution can be rewritten as a false statement, like $2 = 5$. An equation with infinitely many solutions can be rewritten as a true statement, like $4 = 4$.



Check Understanding

Complete the equation below in three different ways so that it has one solution, no solutions, and infinitely many solutions.

$$15x - 5 = \underline{\hspace{2cm}}$$



Go Further

Work with your group. Choose one of the equations on the **Recording Sheet** that has no solution. Can you change one number in the equation so it has exactly one solution? Can you change one number in the equation so it has infinitely many solutions?



Write an Equation

RECORDING SHEET

| Round | Number of Solutions | Left Side | Right Side | Winner |
|-------|---------------------|-----------|------------|--------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |



exactly one solution

exactly one solution

exactly one solution

no solution

no solution

no solution

no solution

**infinitely many
solutions**

**infinitely many
solutions**

**infinitely many
solutions**



$$2(x + 6)$$

$$5(x + 9)$$

$$5x + 7$$

$$3x - 8$$

$$12x - 6$$

$$9x + 1$$

$$4(x - 8)$$

$$2(x - 1)$$

$$3(x + 12)$$

$$10x + 25$$



LESSON 14

Match Scenarios and Systems

What You Need

- Scenario Cards
- System of Equations Cards
- Solution Cards

What You Do

- 1 Shuffle the **System of Equations Cards** and place them faceup in a grid on one side of the table.
- 2 Shuffle the **Solution Cards** and place them faceup in a grid on the other side of the table.
- 3 Shuffle the **Scenario Cards** and place them facedown in a pile in the center of the table.
- 4 Take turns. Select the top **Scenario Card**. Find the **System of Equations Card** that models the scenario. Then find the **Solution Card** that shows the system's solution. Place the matched cards in a pile.
- 5 Players check each other's work. Continue until all the cards are matched.



Check Understanding

Explain how the system of equations represents the scenario below. What is the solution of the system? How does that solution answer the question in the scenario?

$$x + y = 10$$

$$20x + 12y = 168$$

Tara buys 10 pizzas for \$168. Some are large and some are small. Large pizzas cost \$20, and small pizzas cost \$12.



Go Further

Use your matching **System of Equations Cards** and **Solution Cards** to explain how the solution answers the question on each **Scenario Card**.

**Scenario A**

Jack has \$24 in one-dollar and five-dollar bills. He has a total of 8 bills. How many of each bill does he have?

Scenario B

Katie rents 15 tables for a party. Some tables seat 6 people and some seat 8. She needs to seat 110 people. How many of each kind of table did Katie order?

Scenario C

Car Service A charges a \$5 flat rate and \$2 per mile. Car Service B charges a flat rate of \$10 and \$1 per mile. At how many miles do the two services have the same total charge?

Scenario D

Quentin buys 12 tickets for a group of adults and children for a total of \$100. Adult tickets are \$10 each and child tickets are \$5 each. How many of each ticket did Quentin buy?

Scenario E

Mei has \$100 in five-dollar and ten-dollar bills. She has a total of 11 bills. How many of each bill does she have?

Scenario F

The perimeter of a rectangle is 24 inches. Its length is 8 inches longer than its width. What is the length and width of the rectangle?

Scenario G

Marcos buys 20 folders and 10 binders for a total of \$100. Alicia buys 10 folders and 20 binders for \$110. What is the price of each folder and each binder?

Scenario H

Plant A starts at 10 inches tall and grows 1 inch each month. Plant B starts at 4 inches tall and grows 2 inches each month. After how many months will the two plants be the same height?

**System of Equations A**

$$y = x + 8$$
$$2x + 2y = 24$$

System of Equations B

$$x + y = 12$$
$$5x + 10y = 100$$

System of Equations C

$$10x + 20y = 110$$
$$20x + 10y = 100$$

System of Equations D

$$x + y = 15$$
$$6x + 8y = 110$$

System of Equations E

$$y = 2x + 5$$
$$y = x + 10$$

System of Equations F

$$x + y = 8$$
$$5x + y = 24$$

System of Equations G

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

System of Equations H

$$x + y = 11$$
$$5x + 10y = 100$$

**Solution A** $(2, 9)$ **Solution B** $(5, 15)$ **Solution C** $(4, 4)$ **Solution D** $(6, 16)$ **Solution E** $(5, 10)$ **Solution F** $(3, 4)$ **Solution G** $(4, 8)$ **Solution H** $(2, 10)$