

# Assignment

Assignment for Lesson 5.1

Name \_\_\_\_\_ Date \_\_\_\_\_

## Widgets, Dumbbells, and Dumpsters Multiple Representatives of Linear Functions

Widgets cost \$7 each, with a shipping charge of \$11 per order.

1. Write an equation for the problem situation. Use  $w$  to represent the number of widgets ordered and use  $c$  to represent the total cost of an order in dollars.
2. What is the total cost of an order for 12 widgets? What is the total cost of an order for 257 widgets? Show all your work and use a complete sentence in your answer.
3. How many widgets can you order for \$88? Show all your work and use a complete sentence in your answer.
4. How many widgets can you order for \$1488? Show all your work and use a complete sentence in your answer.
5. How many widgets can you order for \$6472? Show all your work and use a complete sentence in your answer.



# Assignment

Name \_\_\_\_\_ Date \_\_\_\_\_

## Selling Balloons Finding Intercepts of a Graph

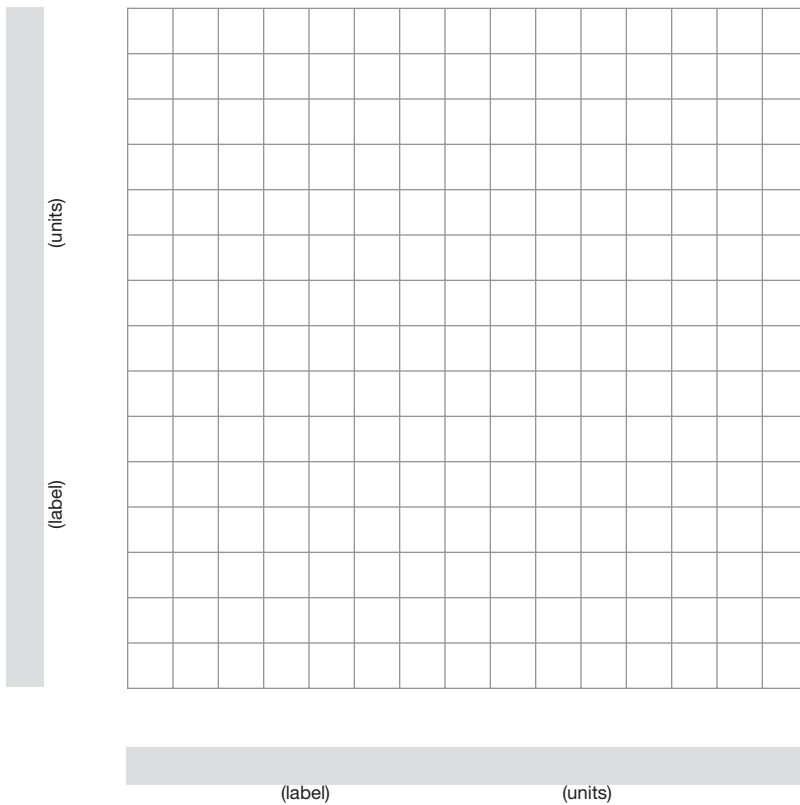
Overnight, a huge blizzard dumped 10 inches of snow on the ground. When the sun comes out, it melts the snow at a rate of about 1 inch per hour.

1. Write an equation for the problem situation. Use  $h$  to represent time in hours and use  $s$  to represent the amount of snow on the ground in inches.
2. Complete the table of values that shows the relationship between the amount of snow in inches on the ground and the time in hours.

Quantity Name	Time since sun came out	Snow on the ground
Unit	hours	inches
Expression	$h$	
	-2	
		9
	5	
		0
	11	

3. Does an  $h$ -value of  $-2$  make sense in the problem situation? Use complete sentences to explain.
4. Create a graph of the data from the table to show the relationship between time and the amount of snow on the ground. Use the bounds and intervals given below. Be sure to label your graph clearly.

Variable quantity	Lower bound	Upper bound	Interval
Time	-3	12	1
Snow on the ground	-3	12	1



5. Use the graph in Question 4 to find the  $h$ - and  $s$ -intercepts. What do these points tell you about the relationship between the amount of snow on the ground and the time in hours. Use complete sentences in your answer.

6. Algebraically, verify the  $h$ - and  $s$ -intercepts you found in Question 5.

7. Does the graph in Question 4 increase or decrease from left to right? Why? Use complete sentences in your answer.

# Assignment

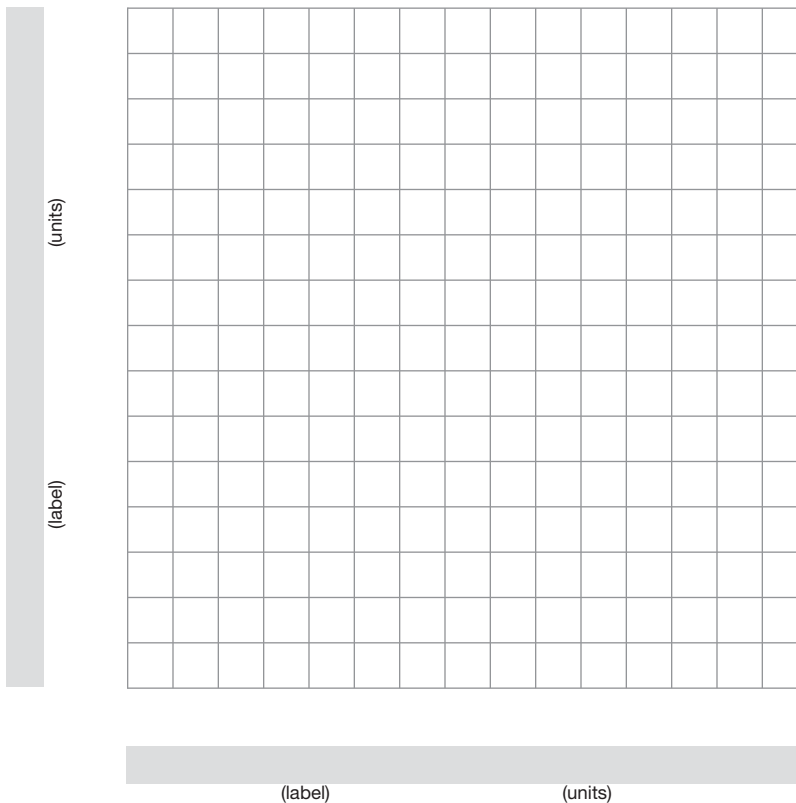
Name \_\_\_\_\_ Date \_\_\_\_\_

## Recycling and Saving Finding the Slope of a Line

The student council is selling heart-shaped lollipops to help raise money for the Valentine's Day dance. They earn \$.25 for each lollipop sold.

1. Write an equation that relates the number of lollipops sold to the amount of money earned. Use  $x$  to represent the number of lollipops sold and  $y$  to represent the amount of money earned.
2. Create a graph of the equation in Question 1 to show the relationship between the number of lollipops sold and money earned. Use the bounds and intervals given below. Be sure to label your graph clearly.

Variable quantity	Lower bound	Upper bound	Interval
Number of lollipops sold	0	75	5
Money earned	0	30	2



- 
3. Use your graph to find the increase in earnings when the number of lollipops sold increases by one. Use a complete sentence in your answer.
  
  4. Use your graph to find the increase in earnings when the number of lollipops sold increases by 20. Use a complete sentence in your answer.
  
  5. Use your graph to find the increase in earnings when the number of lollipops sold increases by 45. Use a complete sentence in your answer.
  
  6. Write a unit rate that compares the increase in earnings to the increase in the number of lollipops sold.
  
  7. Determine whether the slope of the line in Question 2 is positive, negative, zero, or undefined. Complete each sentence to explain.  
The rise of the line is a \_\_\_\_\_ number and the run of the line is \_\_\_\_\_ number. So, the slope is \_\_\_\_\_.
  
  8. Use the slope formula and two points on the line in Question 2 to verify the slope in Question 6.

**Find the slope of the line that passes through the given points. Show all your work.**

- 5**
9. (5, 7) and (6, 5)
  10. (20, 50) and (60, 90)

# Assignment

Name \_\_\_\_\_ Date \_\_\_\_\_

## Running a Marathon Slope-Intercept Form

Write each equation in slope-intercept form, if necessary. Then identify the slope and  $y$ -intercept.

1.  $y = 2x + 3.5$

2.  $y = -3(x - 5)$

3.  $y = \frac{1}{4}x - 10$

Two families are competing on a reality TV show. The goal of the show is to race across the country from Los Angeles, California to New York, New York. The families are taking indirect routes and have different tasks to complete along the way. The family that accomplishes all of their tasks and finishes the race in the least amount of time wins.

- The race has begun and the first family has traveled 450 miles. They are averaging 300 miles per day. Write an equation that gives the total distance the first family has traveled in terms of the number of days that have passed after the first 450 miles were completed. Use  $x$  to represent the number of days and  $y$  to represent the total distance traveled in miles.
- If the first family continues traveling at this rate, how far will they have traveled 4 days after the first 450 miles are completed? Show all your work and use a complete sentence in your answer.
- If the first family continues traveling at this rate, how many additional days will it take them to travel 1950 total miles after the first 450 miles are completed? Show all your work and use a complete sentence in your answer.
- The race has begun and the second family has traveled 1100 miles. They are currently traveling at an average rate of 150 miles per day. Write an equation that gives the total distance the second family has traveled in terms of the number of days that have passed after the first 1100 miles were completed. Use  $x$  to represent the number of days and  $y$  to represent the total distance traveled in miles.

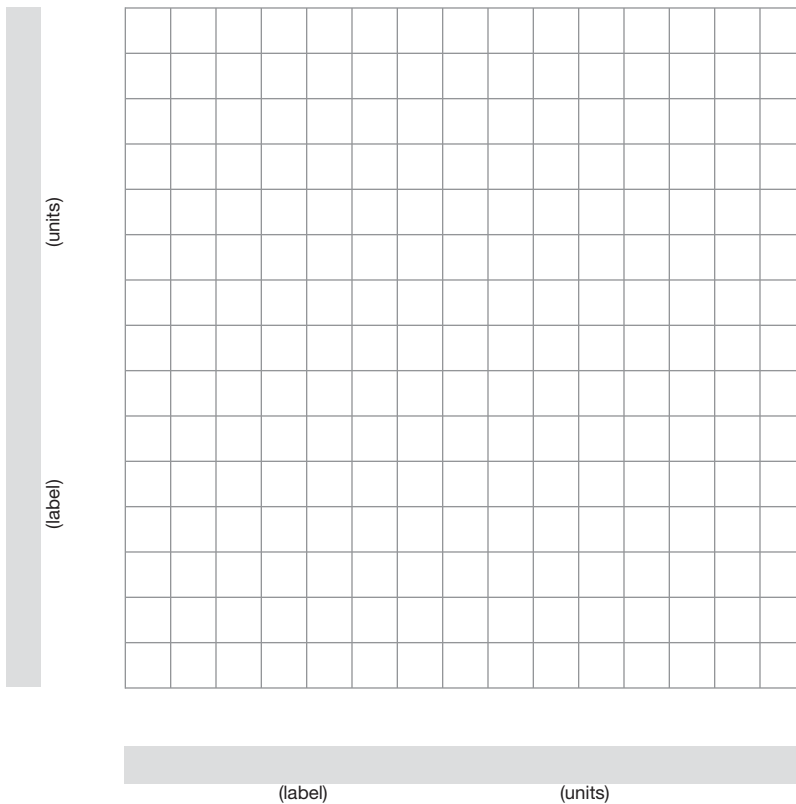
8. If the second family continues traveling at this rate, how far will they have traveled 5 days after the first 1100 miles are completed? Show all your work and use a complete sentence in your answer.

9. If the second family continues traveling at this rate, how many additional days will it take them to travel 1700 total miles after the first 1100 miles are completed? Show all your work and use a complete sentence in your answer.

10. Identify the slope and y-intercept for each equation in Questions 4 and 7.

11. Create graphs of the equations in Questions 4 and 7 to show the relationship between time and total distance. Use the slopes and y-intercepts from Question 10.

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# Assignment

Assignment for Lesson 5.5

Name \_\_\_\_\_ Date \_\_\_\_\_

## Saving Money Writing Equations of Lines

A marathon runner checks his watch at the halfway point (13 miles) of the Boston Marathon and sees that he has been running for about 100 minutes. He realizes that in order to match his personal best he will have to run faster. His personal best time for 26 miles is 191 minutes.

1. In this scenario, what are the two variable quantities? Let the time in minutes be the dependent variable and let the distance in miles be the independent variable. Use a complete sentence in your answer.
2. Identify the two points given in the problem statement.
3. What is the runner's rate (slope) during the second half of the race in minutes per mile? Show all your work and use a complete sentence in your answer.
4. Write an equation in slope-intercept form that gives the time in terms of the distance. Use  $x$  to represent the distance in miles and  $y$  to represent the time in minutes. Show all your work.

**Find an equation of the line that passes through each given set of points. Write your equation in slope-intercept form. Show all your work.**

5.  $(1, 2)$  and  $(2, 0)$

6.  $(4, 100)$  and  $(6, 200)$



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## Spending Money Linear and Piecewise Functions

1. Explain the difference between a linear function and a piecewise function. Use complete sentences in your answer.

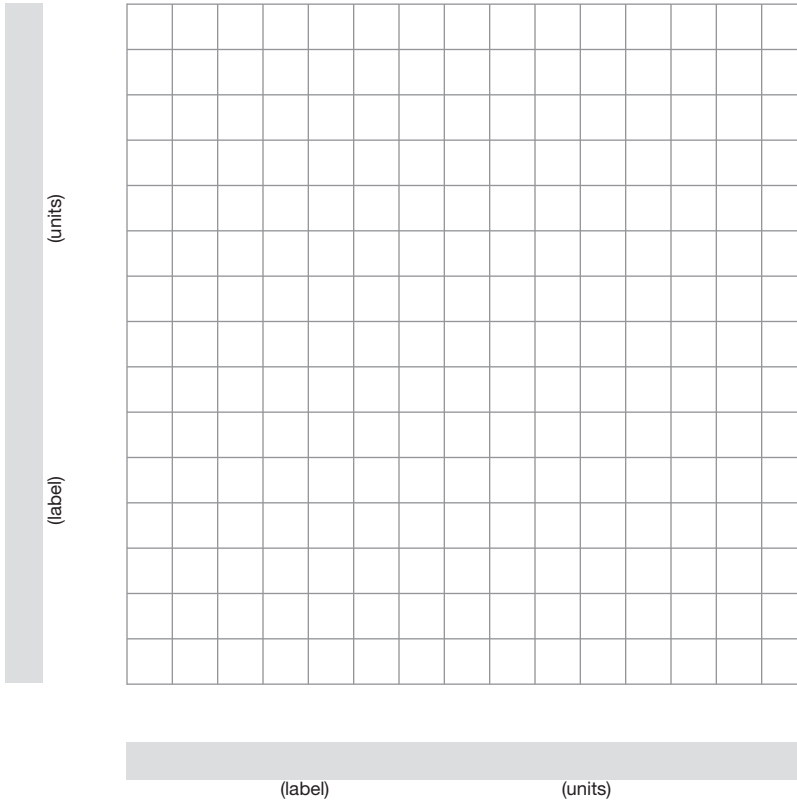
The college library pays its student workers every 2 weeks. On payday, one of the workers receives a \$270 check for the hours that he spends shelving books. The first week (7 days) after payday the student generally does the majority of his shopping and spends an average of about \$25 per day. The next 5 days he spends an average of \$15 per day, and the last 2 days before the next payday he spends only \$10 per day.

2. Complete the table below that shows the amount of money left after different numbers of days.

Time since payday	Money left
days	dollars
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	

3. Create a graph from the table to show the relationship between the time since payday and the amount of money left. First, choose your bounds and intervals. Be sure to label your graph clearly.

Variable quantity	Lower bound	Upper bound	Interval
Time since payday			
Money left			



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4. Write a piecewise function  $f$  for the graph in Question 3. Use  $x$  to represent a number from the domain of your function  $f$ .
5. Does the domain of the function  $f$  accurately represent the domain when you consider the problem situation? Use complete sentences in your answer.

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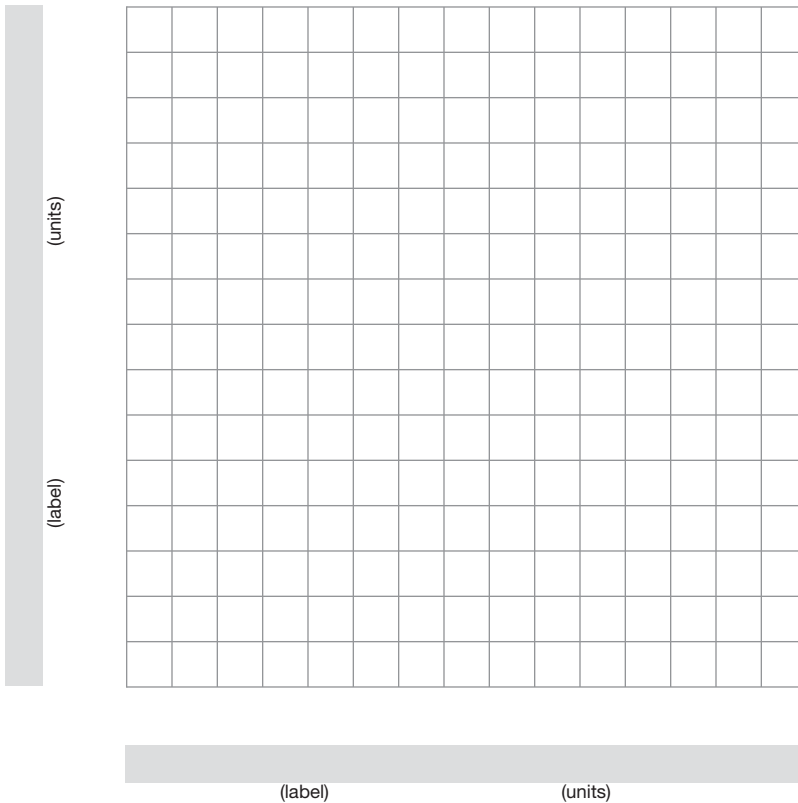
Name \_\_\_\_\_ Date \_\_\_\_\_

## The School Play Standard Form of a Linear Equation

The athletic department will raise money by charging admission to an upcoming football game. The price will be different for students and adults. Student tickets cost \$3 each and adult tickets cost \$5 each.

1. Write an expression that represents the total amount of money the athletic department will raise from the sale of  $x$  student tickets and  $y$  adult tickets.
2. The goal is to raise \$5000 from the sale of tickets to the game. Write an equation that can be used to find the number of student and adult tickets sold if the goal is reached.
3. Using the equation from Question 2, write the intercepts of the equation's graph. Show all your work.
4. What do the intercepts mean in terms of the problem situation? Use complete sentences in your answer.
5. Create a graph of the equation in Question 2 to show the relationship between student tickets and adult tickets. First, choose your bounds and intervals. Be sure to label your graph clearly.

Variable quantity	Lower bound	Upper bound	Interval
Student tickets			
Adult tickets			



6. Assuming the athletic department met its goal of \$5000, find the number of student tickets sold if 600 adult tickets sold. Use complete sentences to explain your reasoning.
  
7. Assuming the athletic department met its goal of \$5000, find the number of adult tickets sold if 400 student tickets sold. Use complete sentences to explain your reasoning.
  
8. Write the equation in Question 2 in slope-intercept form. Show all your work.

Name \_\_\_\_\_ Date \_\_\_\_\_

## Earning Interest Solving Literal Equations

1. A formula for the area of a rectangle is  $A = bh$ , where  $b$  is the length of the base of the rectangle and  $h$  is the height of the rectangle. Solve the equation for  $h$ . Show all your work. Then use a complete sentence to explain how you can find the height when you know the area and length of the base.
2. The formula for the area of a triangle is  $A = \frac{1}{2}bh$ , where  $b$  is the length of the base of the triangle and  $h$  is the height of the triangle. Solve the equation for  $b$ . Show all your work. Then use a complete sentence to explain how you can find the length of the base when you know the area and the height.
3. The formula for the diameter of a circle is  $d = 2r$ , where  $r$  is the radius of the circle. Solve the equation for  $r$ . Show all your work. Then use a complete sentence to explain how you can find the radius when you know the diameter.
4. The formula for the perimeter of a rectangle is  $P = 2l + 2w$ , where  $l$  is the length of the rectangle and  $w$  is the width of the rectangle. Solve the equation for  $w$ . Show all your work.

