Objective   Using Multiple Representations to Solve Problems

Warm-Up

1. How many minutes are in a half of an hour?

2. How many minutes are in an 2-hours and a half?

3. How is seven and a half minutes written as a decimal?

Herman and Melville found this table. The bottom three entries in the second column were smudged, and the boys couldn't read them.

Let's see if you can calculate the unknown values.

Time (minutes)	Total Cost (dollars)
0	20
1	23
2	26
3	29
5	35
10	
20	
50	

1. What is the unit rate of change shown in the table? Explain your reasoning.

2. Define variables for the quantities in the table, and write an equation that relates the two quantities.

3. Use your equation to complete the table. Show your work.

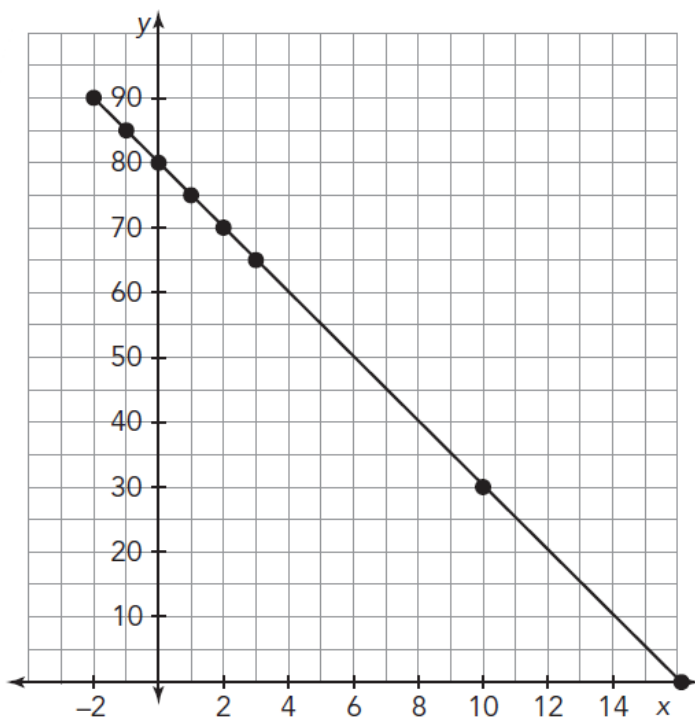4. Use your completed table to construct a graph.
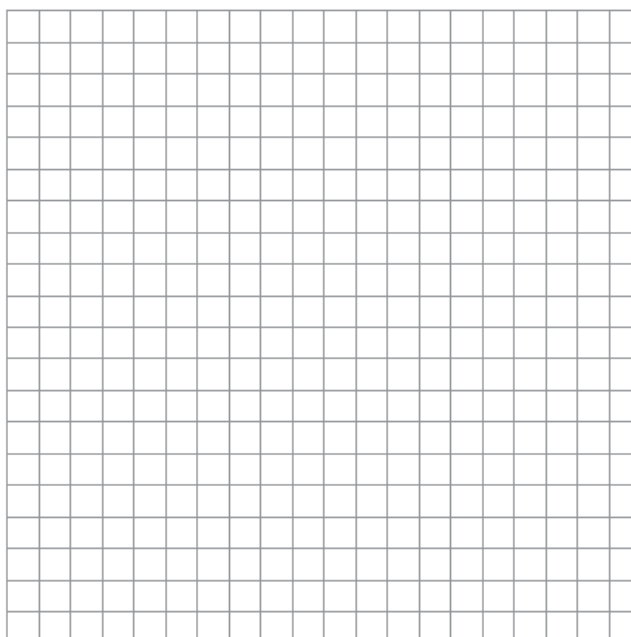
Starting with a Graph to Solve a Problem

This graph shows the relationship between two quantities.

Independent Variable	Dependent Variable
0	80

1. Complete the table using the information in the graph.

2. Write an equation for this relationship.

3. Write a problem situation that can be represented by this graph, table, and equation. Explain what the unit rate means in context.

Equivalent Representations

Ms. Marston wrote the table shown on the board.

She asked her students to complete the table, write the unit rate of change, and finally,
write an equation for this relationship.

1. Complete the table of values and identify the unit rate of change.

x	y
0	−5
1	−3
2	−1
3	1
4	
5	
6	
7	

2. Three of Ms. Marston's students wrote equations to represent this relationship.

Molly: $y = 2x - 5$
Carson: $y = 2(x - 2.5)$
David: $y = \frac{1}{2}(4x - 10)$

Who is correct? Explain your reasoning.

3. Create a problem situation that might fit this equation.

LESSON 9.4b
Texas Tea and Temperature

Objective   Using Multiple Representations to Solve Problems

Practice

The Department of Transportation in each state is responsible for the improvements and repairs of that state's roads. One important job is to repaint the road lines that have worn away or faded. A painting crew is painting a 24-mile stretch of road. They have already completed a total of 9.5 miles of the road. The crew has been painting at a rate of 0.25 mile per hour and continues to paint at the same rate.

1. Identify the two quantities that are changing in this situation, identify the independent and dependent quantities, and define the variables for these quantities. Then write an equation that relates the two quantities.

2. What is the unit rate of change in this situation? Explain.

3. How many total miles of the road will be completed if the crew works for another 2 hours?

4. How many more hours does the crew need to work to complete half of the job?

5. Complete the table and then construct a graph.

	Independent Quantity	Dependent Quantity
Quantities		
Units of Measure		
Variables		
	0	
	2	
	5	
	6.5	
		12
		24
		8
		0