Name _____ Date _____ Class _____

LESSON 5-3

Linear Relationships and Bivariate Data

Practice and Problem Solving: A/B

Does each of the tables represent a linear relationship? Explain why or why not.

1.

Months	0	1	2
Account balance ($)	220	240	260

_____

_____

2.

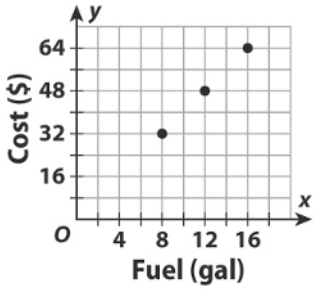
Time (sec)	2	3	4
Distance (ft)	8	12	15

_____

_____

Write an equation for each linear relationship.

3.



_____

4.

Weight (lb), *x*	**Total cost ($), *y***
1	10
2	12
4	16
6	20

_____

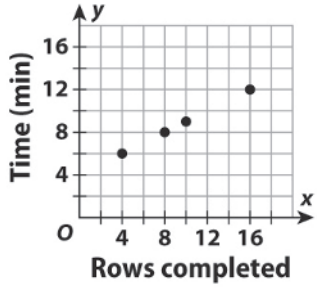
The graph shows the relationship between the number of rows in a friendship bracelet and the time it takes Mia to make the bracelet, including the time it takes to prepare the threads.

5. Determine whether the relationship is linear. If so, write an equation for the relationship.

_____

6. How long will it take for Mia to complete 14 rows?

_____



7. Mia teaches Brynn how to make a bracelet. Graph these points to show Brynn's progress: (2, 6), (4, 8), (8, 10), (12, 12). Is the time *y* it takes Brynn to make a bracelet with *x* rows a linear relationship? Explain.

_____

10. $y = 6x + 15$

11. $87

Reteach

1. slope: 0.2, y-intercept: 40, equation: $y = 0.2x + 40$
2. slope: 2.5, y-intercept: 2.5, equation: $y = 2.5x + 2.5$

Reading Strategies

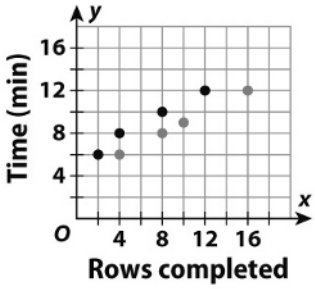
1. The variable y represents the height (in inches) of the plant x days after it was planted.
2. The description states that the relationship is a linear relationship. A linear relationship can be represented by a linear equation.
3. Yes; as the x-values increase, the y-values increase as well. So, the slope is positive.
4. The growth rate of the plant in inches per day
5. The slope (using (0, 15) and (2, 20)) is: $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{20 - 15}{2 - 0} = \frac{5}{2} = 2.5$.
6. On the y-axis; the y-intercept is 15.
7. $y = 2.5x + 15$

Success for English Learners

1. slope: 250
2. y-intercept: 800
3. $y = 250x + 800$
4. Graph the ordered pairs from the table, draw a line through the points, and find the point where the line cross the y-axis; Sample answer: It may be difficult to determine the exact value for the y-intercept when reading it from a graph.

LESSON 5-3

Practice and Problem Solving: A/B

1. Yes; the rate of change is constant.
2. No; the rate of change is not constant.
3. $y = 4x$
4. $y = 2x + 8$
5. yes; $y = 0.5x + 4$
6. 11 min
7. 

   No; the points do not lie on a straight line, so the rate of change is not constant.

Practice and Problem Solving: C

1. Linear; the rate of change is constant; the gallons y of water in the tank is $y = 6x + 7$ after x minutes.
2. Not linear; the rate of change is not constant.
3. $120
4. 6 weeks
5. Lara; Adrian's account balance will be $100, and Lara's account balance will be $120. Lara's account has the greater balance.
6.

Tickets	Total Cost ($)
2	72
4	132
8	252

   The relationship is linear; an equation for the relationship is $y = 30x + 12$, so the cost of 7 tickets is $222.

Practice and Problem Solving: D

1. Yes, because the rate of change is constant.
2. No, because the rate of change is not constant.
3. A
4. B
5. C
6. B
7. Linear; the rate of change is the babysitter's pay per hour, which is constant.