Graph each relation. Is the relation a function? Explain.

1. \[
\begin{array}{c|c}
 x & y \\
-1 & 4 \\
2 & 3 \\
4 & -1 \\
-1 & -2 \\
\end{array}
\]

For each relation, list the members of the domain. List the members of the range. Is the relation a function? Explain.

2. \[
\begin{array}{c|c}
 x & y \\
2 & -4 \\
-4 & 0 \\
-2 & 3 \\
3 & -1 \\
\end{array}
\]

3. \{(7, -2), (8, -2), (-5, 7), (-9, 1)\}
   Domain: __________________________ Range: __________________________
   Function? __________________________

4. \{(-8, 0), (10, 6), (10, -2), (-5, 7)\}
   Domain: __________________________ Range: __________________________
   Function? __________________________

5. \{(9.2, 4.7), (-3.6, 4.8), (5.2, 4.7)\}
   Domain: __________________________ Range: __________________________
   Function? __________________________

6. Is the time it takes you to run a 100-meter race a function of the speed you run? Explain.
Write each equation as a function in “y = . . .” form.

1. 3y = 15x - 12  
2. 5x + 10 = 10y  
3. 3y - 21 = 12x

\[ y = \quad \quad \quad y = \quad \quad \quad y = \quad \quad \quad \]

4. 5y + 3 = 2y - 3x + 5  
5. -2(x + 3y) = 18  
6. 5(x + y) = 20 + 3x

\[ y = \quad \quad \quad y = \quad \quad \quad y = \quad \quad \quad \]

Graph each equation.

7. \( y = -0.5x + 4 \)  
8. \( y = 4 \)

9. \( 2x - 3y = 6 \)  
10. \( -10x = 5y \)

Is each ordered pair a solution of \( 3x - 2y = 12 \)? Write yes or no.

11. (0, 4)  
12. (6, 3)  
13. (4, 0)

Is each ordered pair a solution of \( -2x + 5y = 10 \)? Write yes or no.

14. (-3, 2)  
15. (-10, -2)  
16. (5, 4)

Find the slope of the line through each pair of points.

1. \( A(1, 1), B(6, 3) \)  
2. \( J(-4, 6), K(-4, 2) \)

3. \( P(3, -7), Q(-1, -7) \)  
4. \( M(7, 2), N(-1, 3) \)

Complete the table.

<table>
<thead>
<tr>
<th>Equation</th>
<th>Equation in Slope-Intercept Form</th>
<th>Slope</th>
<th>y-intercept</th>
</tr>
</thead>
<tbody>
<tr>
<td>5x - y = 6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7x + 2y = 10</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Find the slope of each line.

7. \( y = -2x + 3 \)  
8. \( y = \frac{3}{4}x - 1 \)
Practice 8-4
Writing Rules for Linear Functions

Write a rule for each function.

1. \[ \begin{align*}
-4 &\quad 2 \\
-3 &\quad 3 \\
-2 &\quad 4 \\
-1 &\quad 5 \\
0 &\quad 6 \\
1 &\quad 7 \\
2 &\quad 8 \\
3 &\quad 9 \\
4 &\quad 10
\end{align*} \]

2. \[ \begin{align*}
-4 &\quad 2 \\
-2 &\quad 4 \\
0 &\quad 6 \\
2 &\quad 8 \\
4 &\quad 10
\end{align*} \]

3. \[ \begin{array}{c|c}
 x & f(x) \\
-3 & 18 \\
-1 & 6 \\
1 & -6 \\
3 & -18
\end{array} \]

4. \[ \begin{array}{c|c}
 x & f(x) \\
5 & -2 \\
7 & 0 \\
9 & 2 \\
11 & 4
\end{array} \]

Write a function rule to describe each situation.

7. The number of pounds \( p(z) \) as a function of the number of ounces \( z \).

8. The selling price \( x(c) \) after a 45\% markup of an item as a function of the stores' cost \( c \).

9. The total number of miles \( m(r) \) covered when you walk 7 miles before lunch, and you walk for 2 hours at \( r \) mi/hr after lunch.
Practice 8-6

A giraffe was 1 ft tall at birth, 7 ft tall at the age of 4, and 11 1/2 ft tall at the age of 7.
1. Use the data to make a (age, height) scatter plot.
2. Draw a trend line.
3. Write an equation for your trend line in slope-intercept form.

4. Use your equation to find the following information.
   a. the giraffe’s height at the age of 5
   b. the age at which the giraffe was 16 ft tall

A hippopotamus weighed 700 lb at the age of 1 and 1,900 lb at the age of 3, and 2,500 lb at the age of 4.
5. Use the data to make a (age, weight) scatter plot.
6. Draw a trend line.
7. Write an equation for your trend line.

8. Use the equation to predict the following information.
   a. the hippo’s weight at the age of 8
   b. the age at which the hippo weighed 7,900 lb

9. Can this equation be used to predict the hippo’s weight at any age? Explain.
Graph each inequality.

1. \( y < x \)

2. \( x + y \leq 2 \)

3. \( x + 2y \geq 4 \)

4. \( x > -2 \)

Solve each system by graphing.

5. \( y \geq -x - 2 \)
   \( x - 2y < 4 \)

6. \( x + y < 3 \)
   \( y \geq 3x - 2 \)

7. Is the origin a solution to the system in Exercise 5?  
   
8. Is \((4, 0)\) a solution to the system in Exercise 5?  

9. Is \((1, 0)\) a solution to the system in Exercise 6?  

10. Is \((-1, 0)\) a solution to the system in Exercise 6?  

Lesson 8-8 Practice

Pre-Algebra Chapter 8