1. Let a function $f$ be represented symbolically by $f(x) = 8 - x^2$. Find $f(-1)$.

- (A) 9
- (B) 10
- (C) 7
- (D) -6

2. Determine which set of ordered pairs does not represent a function.

- (A) $\{(1, 1), (0, 2), (1, 3), (0, 2)\}$
- (B) $\{(1, 1), (2, 2), (3, 3), (4, 2)\}$
- (C) $\{(1, 4), (2, 3), (3, 1), (4, 1)\}$
- (D) $\{(1, 1), (2, 0), (3, 1), (4, 0)\}$

3. Use the graph of $f$ to determine its domain.

- (A) $[-1, \infty)$
- (B) $[-1, 2)$
- (C) $[-2, \infty)$
- (D) $(-\infty, \infty)$

4. Lake Buchanan, one of the Highland lakes located in central Texas, covers $1.12 \times 10^8$ square feet and contains a total volume of $4.10 \times 10^8$ cubic feet of water. Find the average depth of Lake Buchanan.

- (A) 3.66 feet
- (B) 366 feet
- (C) $3.66 \times 10^{-1}$ feet
- (D) 36.6 feet

5. If possible, find the slope of the line passing through $(-2.8, 6.3)$ and $(-4.3, 1.5)$.

- (A) 0.3125
- (B) -3.2
- (C) undefined
- (D) 3.2

6. The table displays the monthly rainfall for Hilo, Hawaii, for the first six months in a typical year. Find the mean rainfall to the nearest tenth of an inch for these six months.

<table>
<thead>
<tr>
<th>Month</th>
<th>Rainfall (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>26.1</td>
</tr>
<tr>
<td>Feb</td>
<td>19.0</td>
</tr>
<tr>
<td>Mar</td>
<td>10.8</td>
</tr>
<tr>
<td>Apr</td>
<td>7.4</td>
</tr>
<tr>
<td>May</td>
<td>15.0</td>
</tr>
<tr>
<td>Jun</td>
<td>7.2</td>
</tr>
</tbody>
</table>

- (A) 12.9 in.
- (B) 14.3 in.
- (C) 18.7 in.
- (D) 85.5 in.
7. Use the graph of \( f \) to evaluate \( f(-2) \).

(A) \(-1\)  
(B) \(2.5\)  
(C) \(3\)  
(D) \(-4.8\)

8. Find the domain of \( f(x) = \frac{1}{\sqrt{x-4}} \).

(A) \(x = 4\)  
(B) \((4, \infty)\)  
(C) \((-\infty, 4)\)  
(D) \((-\infty, 4) \cup (4, \infty)\)

9. Find the midpoint of the line segment joining the points \((5.3, 6.1)\) and \((-2.8, 1.1)\).

(A) \((1.25, -2.5)\)  
(B) \((4.05, -3.6)\)  
(C) \((-0.4, -0.85)\)  
(D) \((5.7, -195)\)

10. Find the equation of the circle.

(A) \((x - 2)^2 + (y + 1)^2 = 4\)  
(B) \((x + 2)^2 + (y - 1)^2 = 16\)  
(C) \((x + 2)^2 + (y - 1)^2 = 4\)  
(D) \((x - 2)^2 + (y + 1)^2 = 16\)

11. Find the distance between the points \((12.1, 13.5)\) and \((-5.6, -10.1)\) to the nearest tenth.

(A) \(53.8\)  
(B) \(29.5\)  
(C) \(41.3\)  
(D) \(9.9\)

12. Find the domain and range of the relation

\[ S = \{(-5.2, 1.6), (3.5, -2.9), (-4.9, 3.2), (6.5, -1.0), (-2.1, 6.1)\} \]

(A) \(D = \{-5.2, 1.6, 3.5, -2.9, -4.9\}\)  
(B) \(D = \{1.6, -2.9, 3.2, -1.0, 6.1\}\)  
(C) \(D = \{-1.5, -6.0, 1.2, 9.4, 1.7\}\)  
(D) \(D = \{-5.2, 3.5, -4.9, 6.5, -2.1\}\)

\[ R = \{3.2, 6.5, -1.0, -2.1, 6.1\} \]

\[ R = \{-5.2, 3.5, -4.9, 6.5, -2.1\} \]

\[ R = \{4.9, -1.4, -6.2, 1.2, 4.1\} \]

\[ R = \{1.6, -2.9, 3.2, -1.0, 6.1\} \]
13. In 2000 the population of Juneau, Alaska was 30,711 and in 2010 it was 31,275. Use the midpoint formula to estimate Juneau’s population in 2005.
(A) 30,183  (B) 30,311  
(C) 30,366  (D) 30,993

14. The data displayed in the table are linear. State the slope \( m \) of the line passing through the data points.

<table>
<thead>
<tr>
<th>( X )</th>
<th>-1</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>( Y )</td>
<td>-8</td>
<td>-5</td>
<td>-2</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

(A) \( m = -3 \)  (B) \( m = \frac{1}{3} \)  
(C) \( m = 3 \)  (D) \( m = -\frac{1}{3} \)

15. Which of the following is not the graph of a function?

(A)  
(B)  
(C)  
(D)  

16. Write a symbolic representation (formula) of a function \( g \) that computes the number of dollars in \( x \) dimes.

(A) \( g(x) = \frac{x}{10} \)  (B) \( g(x) = 10x \)  
(C) \( g(x) = \frac{x}{0.10} \)  (D) \( g(x) = \frac{10}{x} \)

17. The function \( P \) defined by

\[ P(t) = t^2 + 4t + 33 \]
models the number of diagnostic machines produced by a medical equipment manufacturer yearly, where \( t = 0 \) corresponds to the first year of production, 2000. Find the average rate of change in the number of machines produced per year between 2005 and 2010.

(A) 25 machines/year  (B) 17 machines/year 
(C) 19 machines/year  (D) 40 machines/year
18. Plot the relation \( \{(−3, 1), (2, 1), (5, −3)\} \) in the \( xy \)-plane.

19. The table shows the \textit{Pizzazz-Zee} corporation’s monthly income for the first 6 months of last year in thousands of dollars. Find its median monthly income for this period to the nearest thousand dollars.

<table>
<thead>
<tr>
<th>Month</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income</td>
<td>32</td>
<td>312</td>
<td>92</td>
<td>212</td>
<td>272</td>
<td>188</td>
</tr>
<tr>
<td>(A) $185,000</td>
<td>(B) $554,000</td>
<td>(C) $200,000</td>
<td>(D) $280,000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

20. Use the graph to determine the intervals on which \( f \) is increasing and where it is decreasing.

<table>
<thead>
<tr>
<th></th>
<th>Increasing: ((-\infty, 5))</th>
<th>Decreasing: ((-3, 1))</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A)</td>
<td>(B)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Increasing: ((-\infty, -3))(1, \infty)</th>
<th>Decreasing: ((-3, 1))</th>
</tr>
</thead>
<tbody>
<tr>
<td>(B)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Increasing: ((-3, \infty))</th>
<th>Decreasing: ((5, -\infty))</th>
</tr>
</thead>
<tbody>
<tr>
<td>(C)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Increasing: ((1, \infty))</th>
<th>Decreasing: ((-3, -\infty))</th>
</tr>
</thead>
<tbody>
<tr>
<td>(D)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. Let a function \( f \) be represented symbolically by \( f(x) = 10 - x^2 \). Find \( f(-3) \).
   (A) 34 (B) -16 (C) 19 (D) 1

2. Use the graph of \( f \) to determine its domain.
   (A) \([-6, 5]\) (B) \((-3, 6)\) (C) \((-\infty, \infty)\) (D) \((-2.7, 5.7)\)

3. If possible, find the slope of the line passing through \((2.1, -5.3)\) and \((5.6, 10.9)\).
   (A) 1.6 (B) 0.625 (C) undefined (D) 1.6

4. Lake Mead, formed by the construction of the Hoover Dam, covers \(7.59 \times 10^8\) square feet and contains a total volume of \(1.37 \times 10^{11}\) cubic feet of water. Find the average depth of Lake Mead.
   (A) 180.5 feet (B) 1,805 feet (C) \(1.805 \times 10^{-3}\) feet (D) 18.05 feet

5. Determine which set of ordered pairs does not represent a function.
   (A) \{(1, -2), (2, 0), (3, 0), (4, 4)\} (B) \{(1, -4), (2, 0), (3, 0), (4, 2)\}
   (C) \{(4, 1), (0, 2), (0, 3), (4, 4)\} (D) \{(1, 1), (2, 0), (3, 0), (4, -4)\}

6. The table displays the monthly rainfall for Hilo, Hawaii, for the last six months in a typical year. Find the mean monthly rainfall to the nearest tenth of an inch for these six months.

<table>
<thead>
<tr>
<th>Month</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rainfall (inches)</td>
<td>7.0</td>
<td>13.7</td>
<td>8.1</td>
<td>6.5</td>
<td>2.9</td>
<td>10.5</td>
</tr>
</tbody>
</table>

   (A) 48.7 in. (B) 7.6 in. (C) 24.4 in. (D) 8.1 in.
7. Use the graph of $f$ to evaluate $f(-2)$.

(A) 0  
(B) 1  
(C) 5  
(D) -3.3

8. Find the domain of $f(x) = \frac{1}{\sqrt{5-x}}$.

(A) $x = 5$  
(B) $(-\infty,5)$  
(C) $(5,\infty)$  
(D) $(-\infty,5) \cup (5,\infty)$

9. Find the midpoint of the line segment joining the points $(-3.1, -6.5)$ and $(6.8,-3.7)$.

(A) $(-4.95,-1.4)$  
(B) $(-4.8,1.55)$  
(C) $(1.7,5.25)$  
(D) $(1.85,-5.1)$

10. Find the equation of the circle.

(A) $(x-1)^2 + (y+1)^2 = 25$  
(B) $(x+1)^2 + (y-1)^2 = 5$  
(C) $(x+1)^2 + (y-1)^2 = 25$  
(D) $(x-1)^2 + (y+1)^2 = 5$

11. Find the distance between the points $(-7.3,-1.47)$ and $(-4.5,1.47)$ to the nearest hundredth.

(A) 5.74  
(B) 16.48  
(C) 11.80  
(D) 4.06

12. Find the domain and range of the relation

$S = \{(1.7,-3.2), (-3.7,-2.3), (-2.5,3.7), (5.3,4.1), (2.9,-1.2)\}$.

(A) $D = \{-3.2,-2.3,3.7,4.1,-1.2\}$  
$R = \{1.7,-3.7,-2.5,5.3,2.9\}$

(B) $D = \{1.7,-3.7,-2.5,5.3,2.9\}$  
$R = \{-3.2,-2.3,3.7,4.1,-1.2\}$

(C) $D = \{1.7,-3.2,-3.7,-2.3,-2.5\}$  
$R = \{3.7,5.3,4.1,2.9,-1.2\}$

(D) $D = \{-1.5,-6.0,1.2,9.4,1.7\}$  
$R = \{4.9,-1.4,-6.2,1.2,4.1\}$
13. In 2000 the population of Albuquerque, New Mexico was 448,362 and in 2010 it was 545,852. Use the midpoint formula to estimate Albuquerque’s population in 2005.

(A) 497,107  
(B) 498,298  
(C) 500,135  
(D) 496,641

14. The data displayed in the table are linear. State the slope \( m \) of the line passing through the data points.

<table>
<thead>
<tr>
<th>( X )</th>
<th>-2</th>
<th>0</th>
<th>2</th>
<th>4</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>( Y )</td>
<td>4</td>
<td>1</td>
<td>-2</td>
<td>-5</td>
<td>-8</td>
</tr>
</tbody>
</table>

(A) \( m = \frac{3}{2} \)  
(B) \( m = \frac{2}{3} \)  
(C) \( m = -\frac{2}{3} \)  
(D) \( m = \frac{3}{2} \)

15. Which of the following is not the graph of a function?

(A)  
(B)  
(C)  
(D)  

16. Write a symbolic representation (formula) of a function \( g \) that computes the number of dimes in \( x \) dollars.

(A) \( g(x) = 0.10x \)  
(B) \( g(x) = \frac{x}{10} \)  
(C) \( g(x) = 10x \)  
(D) \( g(x) = \frac{x}{0.10} \)

17. The function \( P \) defined by

\[
P(t) = 2.5t^2 + 0.5t + 12
\]

models the number of diagnostic machines produced by a medical equipment manufacturer yearly, where \( t = 0 \) corresponds to the first year of production, 2000. Find the average rate of change in the number of machines produced yearly between 2005 and 2010.

(A) 28 machines/year  
(B) 190 machines/year  
(C) 38 machines/year  
(D) 95 machines/year
18. Plot the relation \{(-3, 1), (-3, -2), (5, 4)\} in the xy-plane.

(A) \begin{align*}
\text{Increasing: } & (-7, 1) \\
\text{Decreasing: } & (-\infty, -7) \ (1, -\infty)
\end{align*}

(B) \begin{align*}
\text{Increasing: } & (-7, \infty) \\
\text{Decreasing: } & (1, -\infty)
\end{align*}

(C) \begin{align*}
\text{Increasing: } & (0, 4) \\
\text{Decreasing: } & [-\infty, 0) \ (4, \infty)
\end{align*}

(D) \begin{align*}
\text{Increasing: } & (0, -\infty) \\
\text{Decreasing: } & (4, \infty)
\end{align*}

19. Use the graph to determine the intervals on which \( f \) is increasing and which it is decreasing.

20. The table shows the Pizzazz-Zee corporation’s income for the first 6 months of last year in thousands of dollars. Find its median monthly income for this period to the nearest thousand dollars.

<table>
<thead>
<tr>
<th>Month</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income</td>
<td>193</td>
<td>171</td>
<td>257</td>
<td>329</td>
<td>379</td>
<td>221</td>
</tr>
</tbody>
</table>

(A) $239,000  
(B) $258,000  
(C) $208,000  
(D) $920,000
1. Let a function $f$ be represented symbolically by $f(x) = 11 - x^2$. Find $f(-5)$.

2. Lake Roosevelt, formed by the construction of the Grand Coulee Dam, covers $3.98 \times 10^8$ square feet and contains a total volume of $2.51 \times 10^{10}$ cubic feet of water. Find the average depth of Lake Roosevelt to the nearest tenth of a foot.

3. Use the graph of $f$ to determine its domain.

4. If possible, find the slope of the line passing through $(-1.7, 5.3)$ and $(0.1, -9.8)$.

5. Determine which set of ordered pairs does not represent a function.
   
   (A) $\{(1, 2), (2, 4), (3, 0), (4, 2)\}$
   
   (B) $\{(1, -8), (2, 2), (3, 0), (4, 4)\}$

   (C) $\{(-1, 1), (-2, 2), (-1, 3), (0, 4)\}$

   (D) $\{(1, 4), (2, 4), (3, 4), (4, 4)\}$

6. The table displays the monthly rainfall for Tampa, Florida, for the first six months in a typical year. Find the mean monthly rainfall to the nearest hundredth of an inch for these six months.

<table>
<thead>
<tr>
<th>Month</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rainfall (inches)</td>
<td>2.2</td>
<td>2.7</td>
<td>2.8</td>
<td>1.8</td>
<td>2.9</td>
<td>5.5</td>
</tr>
</tbody>
</table>

7. Use the graph of $f$ to evaluate $f(0)$. 

Copyright © 2018 Pearson Education, Inc.
8. Find the domain of \( f(x) = \sqrt{x - 10} \). 

9. Find the midpoint of the line segment joining the points \((4.1, 1.9)\) and \((6.1, 3.5)\).

10. Find the equation of the circle.

11. Find the distance between the points \((11.2, -8.9)\) and \((2.7, 11.5)\) to the nearest tenth.

12. Find the domain and range of the relation 

\[ S = \{(-4.8, 1.2), (1.5, -2.7), (3.2, 5.4), (1.9, 5.1), (2.9, -1.7)\} \]

13. In 2000 the population of Austin, Texas was 659,627 and in 2010 it was 790,390. Use the midpoint formula to estimate Austin’s population in 2005.

14. The data displayed in the table are linear. State the slope \( m \) of the line passing through the data points.

<table>
<thead>
<tr>
<th>( X )</th>
<th>-4</th>
<th>-2</th>
<th>0</th>
<th>2</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>( Y )</td>
<td>-13</td>
<td>-8</td>
<td>-3</td>
<td>2</td>
<td>7</td>
</tr>
</tbody>
</table>

15. Which of the following is not the graph of a function?
16. Write a symbolic representation (formula) of a function \( f \) that computes the number of ounces in \( x \) pounds.

17. The function \( P \) defined by

\[
P(t) = 1.5t^2 + 2.5t + 42
\]

models the number of diagnostic machines produced by a medical equipment manufacturer yearly, where \( t = 0 \) corresponds to the first year of production, 2000. Find the average rate of change in the number of machines produced yearly between 2005 and 2010.

18. Plot the relation \( S = \{(-3, 7), (-1, 3), (-5, -3), (8, -1), (2, 2)\} \) in the \( xy \)-plane.

19. Use the graph to determine the intervals on which \( f \) is increasing and on which it is decreasing.

20. The table shows the \textit{Pizzazz-Zee} corporation’s income for the first 6 months of last year in thousands of dollars. Find its median monthly income for this period to the nearest thousand dollars.

<table>
<thead>
<tr>
<th>Month</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income</td>
<td>127</td>
<td>93</td>
<td>173</td>
<td>125</td>
<td>137</td>
<td>149</td>
</tr>
</tbody>
</table>
1. Let a function \( f \) be represented symbolically by \( f(x) = 12 - x^2 \). Find \( f(-6) \).

2. Lake Powell, formed by the construction of the Glen Canyon Dam, covers \( 7.78 \times 10^8 \) square feet and contains a total volume of \( 9.84 \times 10^{10} \) cubic feet of water. Find the average depth of Lake Powell to the nearest tenth of a foot.

3. Use the graph of \( f \) to determine its domain.

4. If possible, find the slope of the line passing through \((4.2, 1.3)\) and \((7.4, 3.5)\).

5. Determine which set of ordered pairs does not represent a function.
   
   (A) \{\((1, 2), (2, 4), (3, 6), (4, 8)\)\}
   
   (B) \{\((8, 4), (6, 3), (4, 2), (2, 1)\)\}
   
   (C) \{\((-1, \pi), (-2, \pi), (-3, \pi), (-4, \pi)\)\}
   
   (D) \{\((\pi, 1), (\pi, 2), (\pi, 3), (\pi, 4)\)\}

6. The table displays the monthly rainfall for Tampa, Florida, for the last six months in a typical year. Find the mean monthly rainfall to the nearest hundredth of an inch for these six months.

<table>
<thead>
<tr>
<th>Month</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rainfall (inches)</td>
<td>6.4</td>
<td>7.6</td>
<td>6.5</td>
<td>2.4</td>
<td>1.6</td>
<td>2.3</td>
</tr>
</tbody>
</table>

7. Use the graph of \( f \) to evaluate \( f(2) \).

8. Find the domain of \( f(x) = \sqrt{8-x} \).

9. Find the midpoint of the line segment joining the points \((-1.3, 5.7)\) and \((4.6, 2.1)\).
10. Find the equation of the circle.

11. Find the distance between the points (1.8, 1.83) and (−5.11, 2.94) to the nearest hundredth.

12. Find the domain and range of the relation 

\[ S = \{(4.8, 2.1), (5.2, 1.9), (-1.7, -4.3), (2.2, -3.9), (-4.9, -1.1)\} \]

13. In 2000 the population of Portland, Oregon was 529,209 and in 2010 it was 583,776. Use the midpoint formula to estimate Portland’s population in 2005.

14. The data displayed in the table are linear. State the slope \( m \) of the line passing through the data points.

<table>
<thead>
<tr>
<th>( X )</th>
<th>−9</th>
<th>−5</th>
<th>−1</th>
<th>3</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>( Y )</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>−1</td>
</tr>
</tbody>
</table>

15. Which of the following is not the graph of a function?

16. Write a symbolic representation (formula) of a function \( f \) that computes the number of pounds in \( x \) ounces.
17. The function $P$ defined by

$$P(t) = 0.5t^2 + 3.5t + 25$$

models the number of diagnostic machines produced by a medical equipment manufacturer yearly, where $t = 0$ corresponds to the first year of production, 2000. Find the average rate of change in the number of machines produced per year between 2005 and 2010.

18. Plot the relation $S = \{(-4, 1), (2.5), (-1, -1), (3, 6), (4, -1)\}$ in the $xy$-plane.

19. Use the graph to determine the intervals on which $f$ is increasing and on which it is decreasing.

20. The table shows the $Pizzazz-Zee$ corporation’s income for the first 6 months of last year in thousands of dollars. Find its median monthly income for this period to the nearest thousand dollars.

<table>
<thead>
<tr>
<th>Month</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income</td>
<td>231</td>
<td>113</td>
<td>387</td>
<td>217</td>
<td>285</td>
<td>309</td>
</tr>
</tbody>
</table>
# Test 1 Answers

<table>
<thead>
<tr>
<th>Form A</th>
<th>Form B</th>
<th>Form C</th>
<th>Form D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. C</td>
<td>1. D</td>
<td>1. –14</td>
<td>1. –24</td>
</tr>
<tr>
<td>2. C</td>
<td>2. B</td>
<td>2. 63.1 feet</td>
<td>2. 126.5 feet</td>
</tr>
<tr>
<td>4. A</td>
<td>4. A</td>
<td>4. –2.5</td>
<td>4. 1.5</td>
</tr>
<tr>
<td>7. C</td>
<td>7. A</td>
<td>7. –3</td>
<td>7. 1</td>
</tr>
<tr>
<td>9. A</td>
<td>9. D</td>
<td>9. (5.1, −0.8)</td>
<td>9. (1.65, 3.9)</td>
</tr>
<tr>
<td>10. B</td>
<td>10. A</td>
<td>10. (x + 1)^2 + (y + 3)^2 = 9</td>
<td>10. (x − 2)^2 + (y + 2)^2 = 25</td>
</tr>
<tr>
<td>13. D</td>
<td>13. A</td>
<td>13. R = {−1.2, −2.7, 5.4, 5.1, −1.7}</td>
<td>13. R = {2.1, 1.9, −4.3, −3.9, −1.1}</td>
</tr>
<tr>
<td>14. C</td>
<td>14. A</td>
<td>14. m = \frac{5}{2}</td>
<td>14. m = −\frac{1}{4}</td>
</tr>
<tr>
<td>16. A</td>
<td>16. C</td>
<td>16. f(x) = 16x</td>
<td>16. f(x) = \frac{x}{16}</td>
</tr>
<tr>
<td>17. C</td>
<td>17. C</td>
<td>17. 25 machines/year</td>
<td>17. 11 machines/year</td>
</tr>
<tr>
<td>20. B</td>
<td>20. A</td>
<td>20. $132,000</td>
<td>20. $258,000</td>
</tr>
</tbody>
</table>
1. Write a formula for $f$.

1. _____

(A) $f(x) = \frac{2}{3}x - 4$
(B) $f(x) = -\frac{3}{2}x - 4$
(C) $f(x) = \frac{3}{2}x - 4$
(D) $f(x) = -\frac{2}{3}x - 4$

2. To receive an A in the course a student must earn at least 90% of the total points possible on a series of exams. There are three 100-point unit exams and a 200-point final exam. Mark’s scores on the first three exams are 85, 91, and 88. What is the lowest score he can earn on the final exam to earn an A in the course?

2. _____

(A) 93  (B) 186  (C) He cannot earn enough points.  (D) 96

3. Solve the linear equation $6 + 6(12 - x) = 4(x - 1) - 1$.

3. _____

(A) 9.3125  (B) -41.5  (C) -36.5  (D) 8.3

4. Find the slope-intercept form of the equation of the line parallel to $y = 4x - 1$, passing through $(5, -3)$.

4. _____

(A) $y = -\frac{1}{4}x - 3$  (B) $y = 4x - 3$
(C) $y = -\frac{1}{4}x - \frac{7}{4}$  (D) $y = 4x - 23$

5. The graphs of two linear functions $f$ and $g$ are shown in the figure. Solve the inequality $g(x) > f(x)$.

5. _____

(A) $x < 2$  (B) $x > 2$
(C) $x > 3$  (D) $x < 3$
6. Solve the linear inequality $3x + 9 \leq 5x - 2$. Write the solution set in interval notation.
   (A) $\left[ -\frac{11}{2}, \infty \right)$  
   (B) $(\infty, -\frac{11}{2}]$
   (C) $\left( -\infty, \frac{11}{2} \right]$  
   (D) $\left[ \frac{11}{2}, \infty \right)$

7. Solve the absolute value inequality $|7 - 3x| \geq 5$.
   (A) $\frac{2}{3} \leq x \leq 4$  
   (B) $x \leq \frac{2}{3}$ or $x \geq 4$
   (C) $-4 \leq x \leq -\frac{2}{3}$  
   (D) $x \leq -4$ or $x \geq -\frac{2}{3}$

8. Find $f(x) = ax + b$ so that $f$ models the data exactly.

<table>
<thead>
<tr>
<th>$x$</th>
<th>$-6$</th>
<th>$-2$</th>
<th>$1$</th>
<th>$5$</th>
<th>$9$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$f(x)$</td>
<td>$-0.64$</td>
<td>$-0.48$</td>
<td>$-0.36$</td>
<td>$-0.20$</td>
<td>$-0.04$</td>
</tr>
</tbody>
</table>

   (A) $f(x) = 6.06x + 0.36$  
   (B) $f(x) = 0.165x - 0.625$
   (C) $f(x) = 0.04x - 0.4$  
   (D) $f(x) = 25x - 124.8$

9. Graph the linear function $f(x) = \frac{3}{5}x - 3$.  
   (A) 
   (B) 
   (C) 
   (D) 

Copyright © 2018 Pearson Education, Inc.
10. The Old Campaign Warhouse can prepare a political mailing in 8 hours if working alone. It would take the Enthusiastic Volunteer, working on her first campaign, 12 hours. How long will it take them to prepare the mailing if they work together?

(A) 20 hours  
(B) 4.8 hours  
(C) 10 hours  
(D) 2 hours

11. Solve the absolute value equation $|5x + 2| - 2 = 5$.

(A) No solutions  
(B) $1, -\frac{9}{5}$  
(C) $-1, 1$  
(D) $1, -\frac{5}{9}$

12. Sketch the graph of the function $f(x) = |x| - 4$

13. The inequality $|78 - T| \leq 18$ describes the range of monthly average temperatures $T$ in degrees Fahrenheit for Austin, Texas. Find the high and low monthly average temperatures for Austin.

(A) High = 96°F; Low = 0°F  
(B) High = 60°F; Low = 0°F  
(C) High = 96°F; Low = 60°F  
(D) High = 78°F; Low = 18°F
14. The table lists data that are exactly linear. Predict the value of \( y \) when \( x = -2.1 \).

<table>
<thead>
<tr>
<th>( x )</th>
<th>-3</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>( Y )</td>
<td>8.8</td>
<td>5.6</td>
<td>2.4</td>
<td>-0.8</td>
<td>-4</td>
</tr>
</tbody>
</table>

(A) \( y = 7.52 \)  \hspace{1cm}  (B) \( y = -5.92 \)  \hspace{1cm}  (C) \( y = -7.52 \)  \hspace{1cm}  (D) \( y = 5.92 \)

15. The graph depicts the distance \( y \) that a person driving a car on a straight road is from home after \( x \) hours. Between what hours was the person driving slowest?

- (A) 0 and 2
- (B) 2 and 4
- (C) 4 and 5
- (D) 5 and 6

16. Determine how much pure water should be mixed with 18 liters of a 15% solution of hydrochloric acid to make a 12% solution of hydrochloric acid.

- (A) 27 liters
- (B) 0.8 liters
- (C) 4.5 liters
- (D) 22.5 liters

17. A driver of a car is initially 315 miles from home, traveling away from home on a straight freeway at 60 miles per hour. Write a formula for a linear function \( f \) that models the distance between the driver and home after \( x \) hours.

- (A) \( f(x) = 315 + 60x \)
- (B) \( f(x) = 60 + 315x \)
- (C) \( f(x) = 315 - 60x \)
- (D) \( f(x) = 60 - 315x \)

18. Find an equation of the line parallel to the \( x \)-axis, passing through (4, -3).

- (A) \( x = 4 \)
- (B) \( x = -3 \)
- (C) \( y = 4 \)
- (D) \( y = -3 \)

Copyright © 2018 Pearson Education, Inc.
19. Sketch the graph of the function

\[ f(x) = \begin{cases} 
\frac{4}{3}x + 6 & \text{if } -6 \leq x < -3 \\
2 & \text{if } -3 \leq x < 2 \\
-x + 4 & \text{if } 2 \leq x \leq 6.
\end{cases} \]

20. The graphs of three linear functions $f$, $g$, and $h$ with domains $[0, 7]$ are shown in the figure. Solve the inequality $f(x) < g(x) < h(x)$.

(A) $2 < x < 4$
(B) $2 < x < 3$
(C) $3 < x < 6$
(D) $0 < x < 3$
1. Write a formula for $f$.  

(A) $f(x) = -\frac{5}{2}x - 2$

(B) $f(x) = \frac{2}{5}x - 2$

(C) $f(x) = -\frac{2}{5}x - 2$

(D) $f(x) = \frac{5}{2}x - 2$

2. To receive an A in the course a student must earn at least 90% of the total points possible on a series of exams. There are three 100-point unit exams and a 200-point final exam. Mark’s scores on the first three exams are 78, 96, and 87. What is the lowest score he can earn on the final exam to earn an A in the course?

(A) He cannot earn enough points

(B) 154

(C) 189

(D) 94

3. Solve the linear equation $5x - (3 + x) = x + 5(x - 4)$.

(A) No solutions

(B) -2.3

(C) 8.5

(D) -8.5

4. Find the slope-intercept form of the equation of the line parallel to $y = -2x + 3$, passing through (3, -7).

(A) $y = -\frac{1}{2}x - 7$

(B) $y = \frac{1}{2}x - \frac{17}{2}$

(C) $y = -2x - 1$

(D) $y = 2x - 7$

5. The graphs of two linear functions $f$ and $g$ are shown in the figure. Solve the inequality $f(x) > g(x)$.

(A) $x < -4$

(B) $x > -4$

(C) $x > -2$

(D) $x < -2$
6. Solve the linear inequality $2x - 7 \leq 9x + 2$. Write the solution set in interval notation.

(A) $\left[-\frac{9}{7}, \infty\right)$

(B) $\left(-\infty, -\frac{9}{7}\right]$

(C) $\left(-\infty, -\frac{9}{7}\right]$

(D) $\left[\frac{9}{7}, \infty\right)$

7. Solve the absolute value inequality $|7x - 3| \geq 4$.

(A) $x \leq -\frac{1}{7}$ or $x \geq 1$

(B) $-\frac{1}{7} \leq x \leq 1$

(C) $-1 \leq x \leq \frac{1}{7}$

(D) $x \leq -1$ or $x \geq \frac{1}{7}$

8. Find $f(x) = ax + b$ so that $f$ models the data exactly.

<table>
<thead>
<tr>
<th>$x$</th>
<th>$-6$</th>
<th>$-2$</th>
<th>$1$</th>
<th>$5$</th>
<th>$9$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$f(x)$</td>
<td>2.86</td>
<td>1.58</td>
<td>0.62</td>
<td>-0.66</td>
<td>-1.94</td>
</tr>
</tbody>
</table>

(A) $f(x) = -2.2x + 1.58$

(B) $f(x) = -3.125x + 2.505$

(C) $f(x) = -2.2x - 2.82$

(D) $f(x) = -0.32x + 0.94$

9. Graph the linear function $f(x) = 4x - 5$. 

(A)

(B)

(C)

(D)
10. An upgraded version of a computer chip can process a standard data set in 6 µsec. The earlier version of the chip takes 9 µsec to process the same data set. How long would it take both chips working together to process the data set?
(A) 15 µ sec  (B) 3 µ sec  (C) 7.5 µ sec  (D) 3.6 µ sec

11. Solve the absolute value equation |3x − 5| + 2 = 9.
(A) No solutions  (B) −4, 4  (C) \( \frac{2}{3}, 4 \)  (D) \( \frac{2}{3}, 4 \)

12. Sketch the graph of the function \( f(x) = |x - 4| \).

13. The inequality \( |49 - T| \leq 22 \) describes the range of monthly average temperatures \( T \) in degrees Fahrenheit for Holland, Michigan. Find the high and low monthly average temperatures for Holland.
(A) High = 71°F; Low = 0°F  (B) High = 71°F; Low = 27°F  
(C) High = 27°F; Low = 60°F  (D) High = 49°F; Low = 22°F

14. The table lists data that are exactly linear. Predict the value of \( y \) when \( x = -1.7 \).

<table>
<thead>
<tr>
<th>( x )</th>
<th>-3</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>( y )</td>
<td>0.4</td>
<td>1.3</td>
<td>2.2</td>
<td>3.1</td>
<td>4</td>
</tr>
</tbody>
</table>

(A) \( y = 1.57 \)  (B) \( y = 4.63 \)  
(C) \( y = -4.83 \)  (D) \( y = -1.57 \)
15. The graph depicts the distance $y$ that a person driving a car on a straight road is from home after $x$ hours. Between what hours was the person driving fastest?

(A) 0 and 1
(B) 1 and 2
(C) 2 and 4
(D) 4 and 6

16. Determine how much pure water should be mixed with 12 liters of a 18% solution of sodium chloride to make a 10% solution of sodium chloride.

(A) 0.56 liters
(B) 9.6 liters
(C) 28 liters
(D) 21.6 liters

17. A driver of a car is initially 245 miles from home, traveling away from home on a straight freeway at 70 miles per hour. Write a formula for a linear function $f$ that models the distance between the driver and home after $x$ hours.

(A) $f(x) = 245 + 70x$
(B) $f(x) = 60 + 245x$
(C) $f(x) = 245 - 70x$
(D) $f(x) = 70 - 245x$

18. Find an equation of the line parallel to the $y$-axis, passing through (4, –3).

(A) $x = 4$
(B) $x = -3$
(C) $y = 4$
(D) $y = -3$

19. Sketch the graph of the function $f(x)$:

$$f(x) = \begin{cases} 
\frac{-2}{3}x & \text{if } -6 \leq x < -3 \\
2 & \text{if } -3 \leq x < 2 \\
\frac{-3}{4}x + \frac{7}{2} & \text{if } 2 \leq x \leq 6.
\end{cases}$$

(A)  
(B)  
(C)  
(D)  

Copyright © 2018 Pearson Education, Inc.
20. The graphs of three linear functions $f$, $g$, and $h$ with domains $[0,7]$ are shown in the figure. Solve the inequality $f(x) < g(x) < h(x)$.

(A) $2 < x < 5$
(B) $2 < x < 6$
(C) $0 < x < 5$
(D) $0 < x < 4$
1. Write a formula for \( f \).

2. To receive an A in a course a student must earn at least 90% of the total points possible on a series of exams. There are three 100-point unit exams and a 200-point final exam. Mark’s scores on the first three exams are 65, 91, and 89. What is the lowest score he can earn on the final exam to earn an A in the course?

3. Solve the linear equation \( 7 - 8(x - 4) = 3x - 7 \).

4. Find the slope-intercept form of the equation of the line parallel to \( y = \frac{1}{3}x + 4 \), passing through (6, -1).

5. The graphs of two linear functions \( f \) and \( g \) are shown in the figure. Solve the inequality \( f(x) < g(x) \).

6. Solve the linear inequality \( 5x + 7 > 8x + 2 \). Write the solution set in interval notation.

7. Solve the absolute value inequality \( |5x - 2| < 2 \).

8. Find \( f(x) = ax + b \) so that \( f \) models the data exactly.

<table>
<thead>
<tr>
<th>( x )</th>
<th>-6</th>
<th>-2</th>
<th>1</th>
<th>5</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f(x) )</td>
<td>1.50</td>
<td>0.78</td>
<td>0.24</td>
<td>-0.48</td>
<td>-1.20</td>
</tr>
</tbody>
</table>
9. Graph the linear function \( f(x) = 7 - 4x \).

10. An upgraded version of a computer chip can process a standard data set in 12 \( \mu \) sec. The earlier version of the chip takes 18 \( \mu \) sec to process the same data set. How long would it take both chips working together to process the data set?

11. Solve the absolute value equation \( |7x - 3| - 7 = 11 \).

12. Sketch the graph of the function \( f(x) = |x + 5| \).

13. The inequality \( |48 - T| \leq 28 \) describes the range of monthly average temperatures \( T \) in degrees Fahrenheit for Des Moines, Iowa. Find the high and low monthly average temperatures for Des Moines.

14. The table lists data that are exactly linear. Predict the value of \( y \) when \( x = -2.7 \).

<table>
<thead>
<tr>
<th>( x )</th>
<th>-3</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>( y )</td>
<td>-12.7</td>
<td>-11.5</td>
<td>-10.3</td>
<td>-9.1</td>
<td>-7.9</td>
</tr>
</tbody>
</table>
15. The graph depicts the distance \( y \) that a person driving a car on a straight road is from home after \( x \) hours. Between what hours was the person driving slowest?

16. Determine how much pure water should be mixed with 25 liters of a 70% solution of naphthalene to make a 20% solution of naphthalene.

17. A driver of a car is initially 455 miles from home, traveling away from home on a straight freeway at 65 miles per hour. Write a formula for a linear function \( f \) that models the distance between the driver and home after \( x \) hours.

18. Find an equation of the line parallel to the \( y \)-axis, passing through \((-2, 7)\).

19. Sketch the graph of the function

\[
f(x) = \begin{cases} 
\frac{7}{3}x + 10 & \text{if } -6 \leq x < -3 \\
3 & \text{if } -3 \leq x < 2 \\
\frac{1}{4}x + \frac{5}{2} & \text{if } 2 \leq x \leq 6.
\end{cases}
\]

20. The graphs of three linear functions \( f, g, \) and \( h \) with domains \([0, 7]\) are shown in the figure. Solve the inequality \( f(x) < g(x) < h(x) \).
1. Write a formula for \( f \).

2. To receive an A in the course a student must earn 92% of the total points possible on a series of exams. There are three 100-point unit exams and a 200-point final exam. Mark’s scores on the first three exams are 90, 94, and 86. What is the lowest score he can earn on the final exam to earn an A in the course?

3. Solve the linear equation \( 8 - 3(3 - 2x) = x - 4(x - 3) \).

4. Find the slope-intercept form of the equation of the line parallel to \( y = -3x - 1 \), passing through \((1, 9)\).

5. The graphs of two linear functions \( f \) and \( g \) are shown in the figure. Solve the inequality \( f(x) < g(x) \).

6. Solve the linear inequality \( x - 9 > 8x - 6 \). Write the solution set in interval notation.

7. Solve the absolute value inequality \( |4x + 7| < 3 \).

8. Find \( f(x) = ax + b \) so that \( f \) models the data exactly.

<table>
<thead>
<tr>
<th>( x )</th>
<th>-6</th>
<th>-2</th>
<th>1</th>
<th>5</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f(x) )</td>
<td>8.90</td>
<td>3.62</td>
<td>-0.34</td>
<td>-5.62</td>
<td>-10.9</td>
</tr>
</tbody>
</table>