1. Write the equation represented by the tile pattern.

<table>
<thead>
<tr>
<th>Figure #</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td># of tiles</td>
<td>1</td>
<td>5</td>
<td>9</td>
<td>13</td>
<td>17</td>
</tr>
</tbody>
</table>

a. \( y = -4x + 1 \)

b. \( y = 4x + 1 \)

c. \( y = 1x + 4 \)

d. \( y = -1x + 4 \)

2. Which input should you chose for the function \( f(x) = -2(x - 3) \) to get an output of 18?

a. 12

b. -12

c. 6

d. -6

3. A function can be recognized by which of the given condition(s)?

a. Each \( x \)-coordinate has only one \( y \)-coordinate

b. The vertical line test yields only one intersection

c. Both a and b.

d. Each \( y \)-coordinate has only one \( x \)-coordinate

4. Find \( f(-1) \) if \( f(x) = |3x - 2| \)

a. -5

b. 5

c. -1

d. 1
5. Find the domain and range:

a. Domain: all real numbers
   Range: all real numbers

b. Domain: all real numbers
   Range: 3 to infinity

c. Domain: 3 to infinity
   Range: all real numbers

d. Domain: -3 to infinity
   Range: all real numbers

6. Find the domain and range:

<table>
<thead>
<tr>
<th></th>
<th>-3</th>
<th>0</th>
<th>3</th>
<th>6</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>y</td>
<td>2</td>
<td>7</td>
<td>12</td>
<td>17</td>
<td>22</td>
</tr>
</tbody>
</table>

a. Domain: 2 to 22
   Range: -3 to 9

b. Domain: (2, 7, 12, 17, 22)
   Range: (-3, 0, 3, 6, 9)

c. Domain: -3 to 9
   Range: 2 to 22

d. Domain: (-3, 0, 3, 6, 9)
   Range: (2, 7, 12, 17, 22)

7. If \( f(x) = 5x - 4 \), find \( f(2) \)

a. \( f(2) = 3 \)

b. \( f(2) = 6 \)

c. \( f(2) = 48 \)

d. \( f(2) = 14 \)

8. If \( f(x) = 8x + 2 \), find \( x \) if \( f(x) = 18 \)

a. \( x = 16 \)

b. \( x = -2 \)

c. \( x = 146 \)

d. \( x = 2 \)
9. Rewrite without negative or zero exponents.
\[ x^4 \cdot x^6 = \]

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>a.</td>
<td>( x^{10} )</td>
</tr>
<tr>
<td>b.</td>
<td>( x^2 )</td>
</tr>
<tr>
<td>c.</td>
<td>( x^{24} )</td>
</tr>
<tr>
<td>d.</td>
<td>( x^{64} )</td>
</tr>
</tbody>
</table>

10. Rewrite without negative or zero exponents.
\[ (4x^3)^2 = \]

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<table>
<thead>
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<tbody>
<tr>
<td>a.</td>
<td>( 4x^5 )</td>
</tr>
<tr>
<td>b.</td>
<td>( 4x^6 )</td>
</tr>
<tr>
<td>c.</td>
<td>( 16x^5 )</td>
</tr>
<tr>
<td>d.</td>
<td>( 16x^6 )</td>
</tr>
</tbody>
</table>

11. Rewrite without negative or zero exponents.
\[ \frac{2x^6}{8x^2} = \]

<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>a.</td>
<td>( 4x^4 )</td>
</tr>
<tr>
<td>b.</td>
<td>( \frac{x^4}{4} )</td>
</tr>
<tr>
<td>c.</td>
<td>( 6x^8 )</td>
</tr>
<tr>
<td>d.</td>
<td>( 6x^4 )</td>
</tr>
</tbody>
</table>

12. Rewrite without negative or zero exponents.
\[ \frac{(5x^3)^0}{x^{-5}} = \]

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<table>
<thead>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>0</td>
</tr>
<tr>
<td>b.</td>
<td>1</td>
</tr>
<tr>
<td>c.</td>
<td>( x^{-5} )</td>
</tr>
<tr>
<td>d.</td>
<td>( x^5 )</td>
</tr>
</tbody>
</table>

13. Find the slope of the following line:

<p>| | |</p>
<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>( m = \frac{-2}{1} )</td>
</tr>
<tr>
<td>b.</td>
<td>( m = \frac{2}{1} )</td>
</tr>
<tr>
<td>c.</td>
<td>( m = -\frac{1}{2} )</td>
</tr>
<tr>
<td>d.</td>
<td>( m = \frac{1}{2} )</td>
</tr>
</tbody>
</table>
14. What is the equation that describes the following tile pattern?

![Figure 1](image1) ![Figure 2](image2) ![Figure 3](image3)

a. $y = x + 1$

b. $y = 4x + 1$

c. $y = 2x + 1$

d. $y = x + 4$

15. Which of the following graphs has the slope of $-\frac{4}{3}$

![Graph A](image4) ![Graph B](image5) ![Graph C](image6) ![Graph D](image7)

16. Find the slope of the line that goes through (2, 5) and (4, 11).

a. $m = -3$

b. $m = 3$

c. $m = \frac{1}{2}$

d. $m = \frac{1}{3}$
17. Identify the slope and y-intercept of the line  
\[ y = 2.5x + 5.6 \]

a. Slope: 5.6  
   Y-intercept: 2.5  

b. Slope: 2.5  
   Y-intercept: 5.6  

c. Slope: 3  
   Y-intercept: 6  

d. Slope: 1  
   Y-intercept: 2

18. Identify the slope and y-intercept of the line  
\[ y = -5x - 1 \]

a. Slope: -5  
   Y-intercept: -1  

b. Slope: -1  
   Y-intercept: -5  

c. Slope: -5  
   Y-intercept: 1  

d. Slope: 5  
   Y-intercept: -1

19. The graph below shows Josh’s car trip. Explain what real-world quantities the slope and y-intercept represent from this graph:

In this graph, describe what the slope and the y-intercept of the line represents:

a. Slope: number of miles from Josh’s house  
   Y-intercept: time (in hours)

b. Slope: number of miles from Josh’s house for each hour  
   Y-intercept: how many miles Josh started from his house

c. Slope: time (in hours)  
   Y-intercept: number of miles from Josh’s house

d. Slope: how many miles Josh started from his house  
   Y-intercept: number of miles from Josh’s house for each hour
20. Below is a graph of cost versus number of miles driven on a rental car. In this graph, the slope represents…

A. The miles driven  
B. The total cost  
C. The total cost per miles driven  
D. The miles driven per total cost

21. Write the equation of the line that has a slope of –3 and passes through the point (5, 7).
   a. $y = -3x - 8$
   b. $y = -3x + 7$
   c. $y = 5x + 7$
   d. $y = -3x + 2$

22. Write the equation of the line with a slope of 4 and $y$ intercept –1
   a. $y = 4x + 3$
   b. $y = 4x - 1$
   c. $y = 3x + 4$
   d. $y = 4x + 5$

23. Write the equation of the line that has a slope of 9 and passes through the point (0, 4).
   a. $y = 4x + 9$
   b. $y = 9x + 4$
   c. $y = x + 4$
   d. $y = 4x + 0$

24. Write the equation of the line that passes through (2, 10) and (4, 6).
   a. $y = 2x - 14$
   b. $y = 4x - 2$
   c. $y = -2x + 14$
   d. $y = \frac{1}{2}x + 11$
25. If triangle $ABC$ is rotated 180 degrees about the origin, what are the coordinates of $A''$?

A. $(-5, -4)$  
B. $(-5, 4)$  
C. $(-4, 5)$  
D. $(-4, -5)$

26. Use the graph below to answer the following question(s).

Suppose that $\triangle ABC$ is reflected over the $x$-axis. What are the coordinates of the image of point $C$?

A. $(2, 5)$  
B. $(-2, 5)$  
C. $(2, -5)$  
D. $(-2, -5)$

27. Parallelogram $PQRS$ and the coordinates of point $Q$ are shown on the coordinate plane below.

What are the coordinates of the image of point $Q$ after parallelogram $PQRS$ is translated 6 units to the left?
28. Use the figure below to answer the question that follows.

A graphic artist needs to reflect triangle ABC across the x-axis to create Figure A'B'C'. What are the coordinates of A'?

A. (1, -2)  
B. (2, -1)  
C. (-1, 2)  
D. (-2, 1)

29. Which of the following is equivalent to the expression below?

\[ 2a(3a - 4) \]

A. \( 6a - 4 \)  
B. \( 6a - 8 \)  
C. \( 6a^2 - 4a \)  
D. \( 6a^2 - 8a \)

30. Multiply: \((3x - 4)(6x + 7)\)

A. \( 9x^2 + 3 \)  
B. \( 18x^2 - 28 \)  
C. \( 18x^2 - 3x - 28 \)  
D. \( 18x^2 + 3x - 28 \)

31. Which polynomial is equivalent to \((2y - 3)^2\) ?

A. \( 4y^2 + 6y - 9 \)  
B. \( 4y^2 - 12y + 9 \)  
C. \( 4y^2 + 9 \)  
D. \( 4y^2 - 9 \)

32. Which polynomial represents \((3x^2 + x - 4)(2x - 5)\) ?

A. \( 6x^3 - 13x^2 - 13x - 20 \)  
B. \( 6x^3 - 13x^2 - 13x + 20 \)  
C. \( 6x^3 + 13x^2 + 3x - 20 \)  
D. \( 6x^3 + 13x^2 + 3x + 20 \)

Answer questions 33-36 about the graph:
33. What is the equation for the line of best fit?
   a. \( y = x + 1.3 \)
   b. \( y = 1.3x + 1 \)
   c. \( y = 1.3x + 1.3 \)
   d. \( y = x + 1 \)

34. Find the upper boundary for \( x = 5 \)
   a. 11.5
   b. 7.5
   c. 3.5
   d. 5

35. Find the lower boundary for \( x = 8 \)
   a. 11.5
   b. 15.5
   c. 7.5
   d. 12

36. Find the residual for \( x = 1 \)
   a. 1
   b. -1
   c. -4
   d. 4
37. What does a correlation coefficient of 0.61 mean?
   a. A weak negative correlation
   b. A strong negative correlation
   c. A strong positive correlation
   d. No correlation

38. What does a residual of -9 mean?
   a. The actual data is greater than the estimated data
   b. The actual data is less than the estimated data

Answer questions 39-40 about the scatter plot below:

39. Estimate a possible correlation coefficient for the plot and LSRL below
   a. $r = 1$
   b. $r = -1$
   c. $r = -0.5$

40. Find the residual for $x = 7$
   a. 4
   b. -4
   c. 1
| d. \( r = 0 \) | d. \(-1\) |