1. The range of a relation tells what values __Y__ can be. 2. What number can we not divide by? ___0____

3. The domain of a relation tells what values __X__ can be. 4. “f(x)” is another name for ___Y____.

5. What numbers can we not take the square root of in the real numbers? Negative numbers____

6. In a word problem, the “average rate of change” is the same as the __slope__ and the starting point is the same as the __Y-Intercept__.

7. Given the relation {(-2, 5), (0, 2), (1, 3), (4, -2)}, find the following:
   a) Domain: {-2, 0, 1, 4}  b) Range: {5, 2, 3, -2}
   c) Maximum of x-values: 4  d) Minimum of x-values: -2
   e) Maximum of y-values: 5  f) Minimum of y-values: -2
   g) Make a line graph of the relation on the grid to the right.

8. Given f(x) = –2x – 5:
   a) Find f(2)    b) Find f(0)                 c) Find f(–3 )
   -9        -5       1

9. Is the relation {(2.1, 4.3), (–2.3, 0 ), (2.1, 8.1)} a function? Why or why not? No because the x-value 2.1 maps to two different y-values.

10. Graph the line given by y = $\frac{3}{2}x - 1$

11. Find the slope of the following lines:
   a) $f(x) = \frac{3}{4} - 4x$ -4
   b) $y = 1.2x + 3.7$ 1.2
   c) $5x + 7y = 9$ $-\frac{5}{7}$
   d) Passing through (1, –4) and (–2, 3) $-\frac{7}{3}$

12. Given U = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}, A = {2, 3, 6, 8} and B = {1, 2, 5, 6, 9}, find the following:
   a) Draw the Venn diagram that represents the sets.  b) A ∪ B  c) A ∩ B
   \{1, 2, 3, 5, 6, 8, 9\}  \{2, 6\}
13. Graph the line given by \( x - 2y = 4 \)

<table>
<thead>
<tr>
<th>x</th>
<th>y</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-2</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>-1</td>
</tr>
</tbody>
</table>

14. Find the domains of the functions below:

a) \( f(x) = \frac{2}{x + 3} \)  
   all reals except -3

b) \( f(x) = \sqrt{x - 5} \)  
   \( x \geq 5 \)

c) \( f(x) = 3x - 5 \)  
   all real numbers

15. Find the equation of the line having a slope of 1.6 and passing through (0, 6.9). \( y = 1.6x + 6.9 \)

16. Given the graph of the line below, find the following. (Assume each tick mark is “1”.)

   a. \( \Delta x: 3 \) (or -3)
   
   b. \( \Delta y: 1 \) (or -1)

   c. The slope of the line: \( \frac{1}{3} \)
   
   d. The y-intercept of the line: \( (0, -3) \)

   e. The equation of the line: \( y = \frac{1}{3}x - 3 \)

   f. A point on the line other than the y-intercept. Several possibilities:
      \( (6, -1) \), \( (3, -2) \), \( (-3, -4) \), \( (-6, -5) \)

17. An internet company charges a one-time fee of $60 to go to a customer’s house to install a cable modem and the needed software on the customer’s home computer. The monthly charge for the internet service is $39.99 per month. Let \( C(x) \) represent the total cost the customer has paid for having the internet service for “\( x \)” months.

   a) How much will a person have paid for the internet service over a period of a year and a half? \$779.82

   b) Find the average rate of change of \( C(x) \).

   c) Find the y-intercept of \( C(x) \).

   d) Find the equation \( C(x) \).

   \$39.99 per month \( (0, 60) \) \( C(x) = 39.99x + 60 \)

18. Determine whether the data in the table below represents a linear or a nonlinear function.

<table>
<thead>
<tr>
<th>x</th>
<th>y</th>
</tr>
</thead>
<tbody>
<tr>
<td>-4</td>
<td>-6</td>
</tr>
<tr>
<td>-2</td>
<td>-1</td>
</tr>
<tr>
<td>-1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>12</td>
</tr>
</tbody>
</table>

   Non-linear

   Slopes are different between pairs of points.

19. Find the y-intercepts of the following lines:

a) \( y = 2 - \frac{3}{7}x \) \( (0, 2) \)

b) \( 7x - 6y = 42 \) \( (0, -7) \)

c) \( 3x = 5y - 15 \) \( (0, 3) \)