1. The range of a relation tells what values \( Y \) can be.  
2. What number can we \textbf{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 \textbf{not} take the square root of in the real numbers? \( \text{negatives} \)  
6. In a word problem, the “average rate of change” is the same as the \textit{slope} and the starting point is the same as the \textit{y-intercept}.  
7. Write “\( f(3) = -7 \)” as an ordered pair. \( (3, -7) \)  
8. Given \( U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\} \), \( A = \{1, 3, 4, 6, 8\} \) and \( B = \{1, 4, 7, 9, 10\} \), find the following:  
a) Draw the Venn diagram that represents the sets.  
b) \( A \cup B \)  
c) \( A \cap B \)  
\{1, 3, 4, 6, 7, 8, 9, 10\}  
\{1, 4\}  
9. Given the relation \( \{(2, -1), (-1, 3), (0, -4), (-3, -3)\} \), find the following:  
a) Domain: \( \{2, -1, 0, -3\} \)  
b) Range: \( \{-1, 3, -4, -3\} \)  
c) Maximum of x-values: \( 2 \)  
d) Minimum of x-values: \( -3 \)  
e) Maximum of y-values: \( 3 \)  
f) Minimum of y-values: \( -4 \)  
g) Make a line graph of the relation on the grid to the right.  
10. Is the relation \( \{(5.1, -3.8), (2.1, 5), (1, 5), (2.1, 2)\} \) a function? Why or why not? \( \text{No. The x-value 2.1 is mapped to two different y-values (5 and 2).} \)  
11. Graph the line given by \( y = \frac{1}{2}x - 2 \).  
12. Find the slope of the following lines:  
a) \( f(x) = 2x + 8 \) \( m = 2 \)  
b) \( y = 3.2 - 8.6x \) \( m = -8.6 \)  
c) \( 5x + 6y = 18 \) \( m = -\frac{5}{6} \)  
d) Passing through \((-1, -3)\) and \((3, 7)\) \( m = \frac{5}{2} \)
13. Find the domains of the functions below:

a) \( f(x) = 3x^2 + 2x - 8 \)
   all real numbers

b) \( f(x) = \sqrt{x - 2} \)
   \( x \geq 2 \)

c) \( f(x) = \frac{3}{x + 1} \)
   all real numbers except -1

14. Find the equation of the line having the following properties:

a) slope of 1.8 and passing through (0, -2.1).
   \( y = 1.8x - 2.1 \)

b) slope of \(-\frac{1}{6}\) and passing through (0, 3).
   \( y = -\frac{1}{6}x + 3 \)

c) slope of 2 and passing through (0, \(-\frac{1}{2}\)).
   \( y = 2x - \frac{1}{2} \)

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

   a. \( \Delta x: +4 \) (or -4)
   b. \( \Delta y: +3 \) (or -3)
   c. The slope of the line \( \frac{3}{4} \)
   d. The y-intercept of the line -4
   e. The equation of the line \( y = \frac{3}{4}x - 4 \)
   f. A point on the line other than the y-intercept. Answers will vary. \((-4, -7), (0, -4), (4, -1), (8, 2)\) are all possibilities.

16. 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>-2</td>
<td>-7</td>
</tr>
<tr>
<td>-1</td>
<td>-5</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
</tr>
</tbody>
</table>

slopes are different → nonlinear function

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

a) \( y = -\frac{2}{3}x + 5 \) \((0, 5)\)

b) \( 2x - 5y = 15 \) \((0, -3)\)

c) \( 4x = 3y + 24 \) \((0, -8)\)

18. Given \( f(x) = -4x - 9 \):

a) Find \( f(2) \)
   \(-17\)

b) Find \( f(-3) \)
   \(3\)

c) Find \( f(0) \)
   \(-9\)

19. Write the following in slope-intercept form.

a) \( 3x + 5y = 15 \)
   \( y = -\frac{3}{5}x + 3 \)

b) \( 2x - 3y = 6 \)
   \( y = \frac{2}{3}x - 2 \)

c) \( 4x - 7y = 28 \)
   \( y = \frac{4}{7}x - 4 \)