1) Determine which tables represent a linear relationship. Is change in $y$ change in $x$ the same?

Graph each of the functions.

2) $y = 3x - 5$ 
   $m = 3$ $b = -5$

3) $y - 2 = \frac{1}{2}(x + 4)$
   $(4, 2)$ $m = \frac{1}{2}$

4) $2x - 3y = 12$
   $\frac{x - 4}{2} + \frac{2y}{3} = 2$
   $x = 0$ $y = -4$

5) $y = -x + 8$
   $m = -1$ $b = 8$

6) $y = 4$
   Horizontal line

7) $6x + y = 6$
   $\frac{x - 4}{6} + \frac{y - 4}{2} = 1$
   $x = 0$ $y = 6$

8) $y = \frac{3}{4}x + 2$
   $m = \frac{3}{4}$ $b = 2$

9) $y + 3 = \frac{2}{3}(x - 3)$
   $m = \frac{2}{3}$ $(3, -3)$
10) Complete the table.

<table>
<thead>
<tr>
<th>Linear Relationship</th>
<th>Slope-Intercept</th>
<th>Point-Slope</th>
<th>Intercepts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>slope = ( \frac{2}{1} = 2 )</td>
<td>( y - y = 2(x - 1) )</td>
<td>x-intercept: ((-1, 0))</td>
</tr>
<tr>
<td></td>
<td>( y = 2x + 2 )</td>
<td></td>
<td>y-intercept: ((0, 2))</td>
</tr>
<tr>
<td></td>
<td>slope = ( \frac{10}{2} = 5 )</td>
<td>( y - 0 = 5(x + 2) )</td>
<td>x-intercept: ((-2, 0))</td>
</tr>
<tr>
<td></td>
<td>( y = 5x + 10 )</td>
<td></td>
<td>y-intercept: ((0, 10))</td>
</tr>
<tr>
<td>3</td>
<td></td>
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<tr>
<td></td>
<td>y = ( \frac{1}{2}x - 4 )</td>
<td>( y + 4 = \frac{1}{2}(x - 0) )</td>
<td>x-intercept: ((9, 0))</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>y-intercept: ((0, -4))</td>
</tr>
<tr>
<td>7</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>y = ( \frac{3}{2}x - 3 )</td>
<td>( y - 0 = \frac{3}{2}(x - 2) )</td>
<td>x-intercept: ((2, 0))</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>y-intercept: ((0, -3))</td>
</tr>
</tbody>
</table>
11) The amount of rain in a rain gauge during a 12-hour period is shown in the graph to the right. Write a general description of what is happening during this time period.

- It rains for 3 hours.
- Then the water evaporates for 2 hours.
- It rains again for 3 hours.
- And then the water takes 4 hours to evaporate.

12) Find the numerical value of the slope of each segment.

Slope of A: \( \frac{4}{3} \)  
Slope of B: \( -\frac{5}{2} \)  
Slope of C: \( \frac{8}{3} \)  
Slope of D: \( \frac{10}{4} = -\frac{5}{2} \)

13) Write the equation of each line segment in slope intercept form.

Line A: \( y = \frac{4}{3}x + 3 \)

Line B: \( y = -\frac{5}{2}x + 14.5 \)

Line C: \( y = \frac{8}{3}x - 11.3 \)

Line D: \( y = -\frac{5}{2}x + 30 \)

14) Write the equation of each line segment in point-slope form:

Line A: \( y - 7 = \frac{4}{3}(x - 3) \)

Line B: \( y - 7 = -\frac{5}{2}(x - 3) \)

Line C: \( y - 10 = \frac{8}{3}(x - 8) \)

Line D: \( y - 10 = -\frac{5}{2}(x - 8) \)

15) State the x-intercept and its meaning.

\( (12, 0) \)

At 12 hours, there is no rain in the rain gauge.

16) State the y-intercept and its meaning.

\( (0, 3) \)

Amount of rain in the rain gauge at the start.
17) Does each part of the graph consist of linear relationships? Why or why not? Yes. All parts are linear because they are lines.

18) Find the numerical value of the slope of each segment.
   
   Slope of A: $\frac{3}{2}$  
   Slope of B: 0  
   Slope of C: $\frac{5}{2}$  
   Slope of D: undefined  
   Slope of E: $\frac{1}{2}$

19) Write the equation of each line segment in slope intercept form.
   
   Line A: $y = -\frac{3}{2}x + 6$  
   Line B: $y = 3$  
   Line C: $y = \frac{5}{2}x - 7$  
   Line D: $x = 6$  
   Line E: $y = \frac{1}{2}x - 3$

20) State and label the x-intercept.  
   $(6, 0)$

21) State and label the y-intercept.  
   $(0, 6)$

The graph of the parent function $f(x)$ is given.

22) State the domain and range for this function.
   Domain: $[-6, 6]$  
   Range: $[0, 4]$

Graph each of the transformations and state the new domain and range.

Describe the effect of the following transformations on the parent function.

23) $f(x) - 5$  
   Down 5  
   Domain: $[-6, 6]$  
   Range: $[-5, -1]$

24) $f(x + 1)$  
   Left 1  
   Domain: $[-7, 5]$  
   Range: $[0, 4]$

25) $f(x - 1) + 2$  
   Right 1 up 2  
   Domain: $[-5, 2]$  
   Range: $[2, 6]$

26) $f(x + 2) - 1$  
   Left 2 down 1  
   Domain: $[-8, 4]$  
   Range: $[-1, 3]$