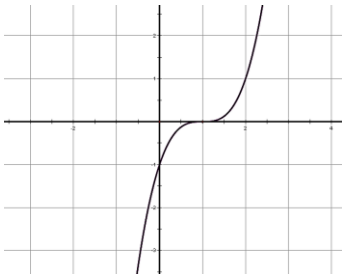
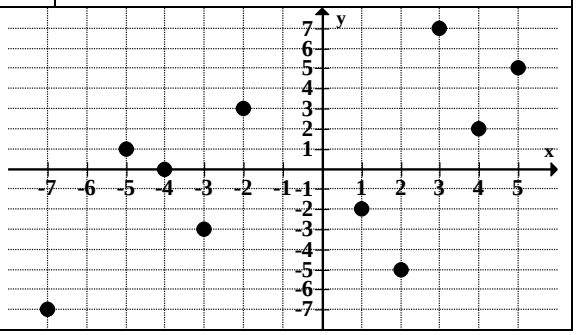
Foundations of Algebra
Learning Goal 5.1

Name:_____
Date:_____ Block:_____

Linear Functions and Graphs Review

What you need to know & be able to do	**Things to remember**	**Examples**	
1. Determine if a relation is a function.	Every input only has one output (each 'x' only has one 'y') Use the vertical line test on graphs.	1. Determine if the graph is a function. 	2. Determine if the table represents a function. **x** | **y** -1 | 4 0 | 5 2 | 6 -1 | 7
2. Create an input-output table for a function.	"x-y chart" – choose the x-values & plug them in	3. Create an input-output table for the function $f(x) = 2x - 3$. Use x = -2, -1, 0, 1, and 2.	4. Create an input-output table for the function $f(x) = 6$. Use x = -2, -1, 0, 1, and 2.
3. Evaluate functions.	f(x) function notation f(2) means you must substitute a '2' for every 'x' in the function!	5. Evaluate f(4). $f(x) = x^2 + 3x - 1$	6. Find the value of $f(x) = 4x - 2$ when $x = -1$.
		7. a. Find f(5). b. Find the value of x for f(x) = 2. c. What is the maximum and minimum? Write in function notation.	

4. Write a function.

8.

Time Worked (h)	1	2	3	4
Amount Earned f(h)	5	10	15	20

9.

x	1	2	3	4
y	-2	-1	0	1

5. Create a function & use it to solve a problem.

10. You join a kickboxing class at a local gym. The cost is $5 per class plus $30 for the initial membership fee. Write a rule for the total cost of the class as a function of x. How much will it cost if you attend 7 classes?

11. Air Force One can travel 630 miles per hour. Let h be the number of hours traveled. Write a function rule that represents the total number of miles traveled. Then, determine how many miles Air Force One can travel in 4 hours.

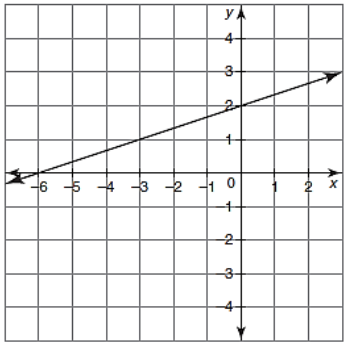
6. Calculate the average rate of change (slope).

"slope"

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\frac{\text{Change in y}}{\text{Change in x}}$$

12. Calculate the slope. Then write the equation of the line.



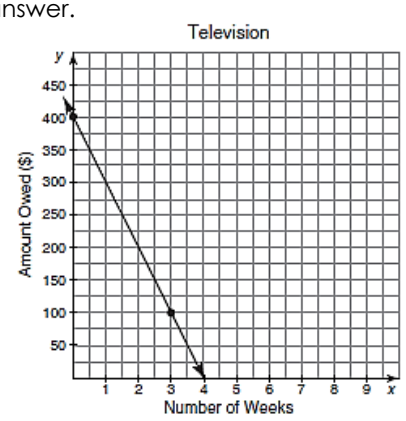
13. Calculate the average rate of change between the following points on a line.

(0, 4) & (-3, 10)

14. Calculate the slope. Give a labeled answer.

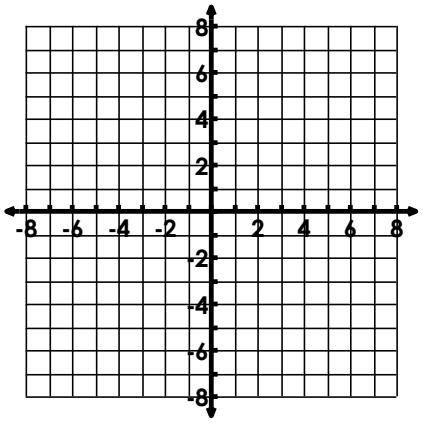
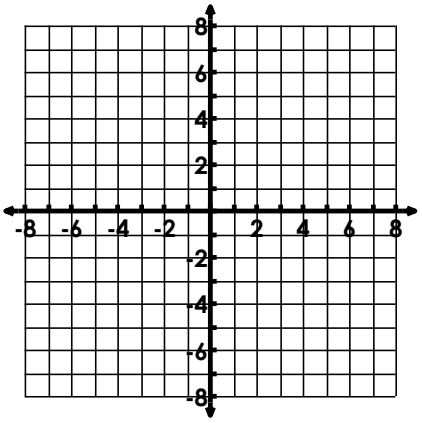
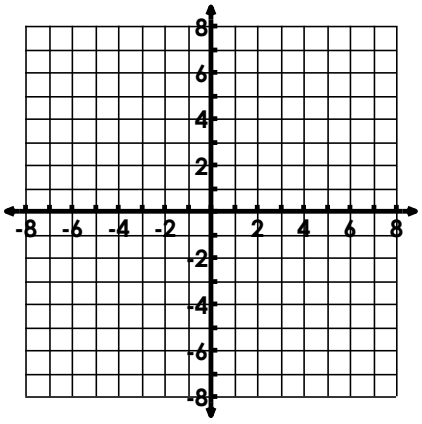
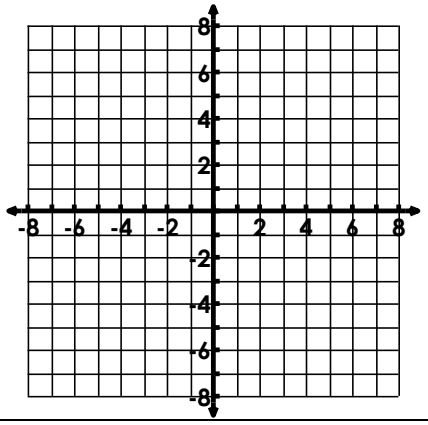
Number of Balloons	Total Cost of Balloons (in Dollars)
2	6
4	12
6	18
8	24

15. Calculate the slope. Give a labeled answer.



<table>
<tr>
<td>7. Calculate the y-intercept</td>
<td>Point where graph crosses y-axis

(0, b)</td>
<td>16. Name the y-intercept:
<table><tr><td>x</td><td>0</td><td>1</td><td>3</td><td>4</td></tr><tr><td>y</td><td>8</td><td>6</td><td>2</td><td>0</td></tr></table></td>
<td>17. A photography studio charges $50 that includes a sitting fee and 6 prints. Luigi increased his order to 11 prints and paid $65. How much was the sitting fee?</td>
</tr>
<tr>
<td rowspan="2">8. Graph a linear function</td>
<td rowspan="2">$y = mx + b$

*Always graph the y-intercept first and then use slope to determine next point.</td>
<td>18. Graph: $f(x) = -\frac{2}{3}x + 6$
  </td>
<td>19. Graph: $-4x + 2y = 12$
  </td>
</tr>
<tr>
<td>20. Graph x = -3. Name slope & y-intercept
  </td>
<td>21. Graph y = 4. Name slope & y-intercept.
  </td>
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<tr>
<td>9. Convert from standard to slope intercept form

Day 6</td>
<td>Slope Intercept:
y =mx + b

Standard: Ax + By = C</td>
<td>22. Solve for y: 4x + 2y = 8</td>
<td>23. Determine the slope and y-intercept:
3x – 6y = -12.</td>
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<tr>
<td>10. Convert from slope intercept to standard form</td>
<td>Slope Intercept:
y =mx + b

Standard: Ax + By = C
(no negative A values; multiply by -1 if necessary)</td>
<td>24. Put in standard form:
y = 3x + 4

Skip</td>
<td>25. Put in standard form:
y = -2/3x – 5

Skip</td>
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<tr>
<td rowspan="3">11. Write the equation of a line.</td>
<td rowspan="3">$y = mx + b$</td>
<td>26. Write the equation of the line that has a slope of $-\frac{1}{2}$ and contains the point (4, 6).</td>
<td>27. Write the equation of the line that contains the points (-2, 2) and (2, -6).</td>
</tr>
<tr>
<td>28. Write the equation of the line that has a slope of 5 and y-intercept at (0, 3).</td>
<td>29. Write the equation of the line the corresponds to the following table:
<table>
<tr><td>x</td><td>2</td><td>4</td><td>6</td><td>8</td></tr>
<tr><td>y</td><td>-6</td><td>-4</td><td>-2</td><td>0</td></tr>
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</td>
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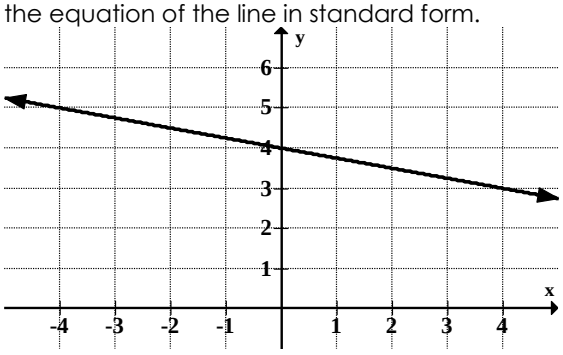
<tr>
<td colspan="2">30. Write the equation of the line that corresponds to the graph below. Then write the equation of the line in standard form.
 
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