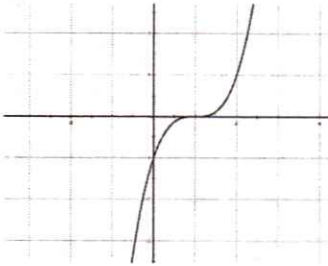
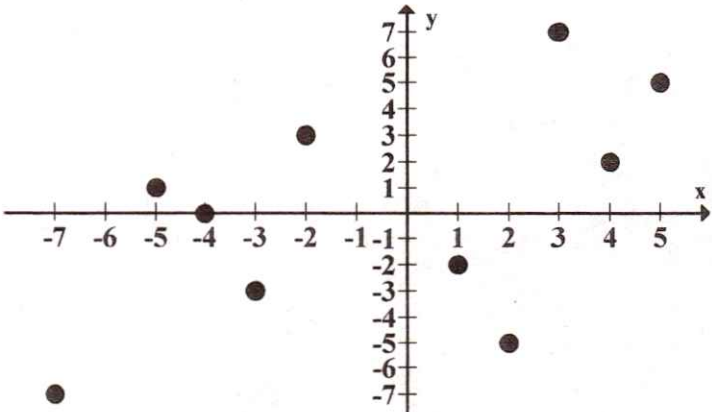


Linear Functions – Unit 5 Review DUE FRIDAY NOVEMBER 8TH

	Things to remember	Examples											
1. Determine if a relation is a function.	<p>Every input only has one output (each 'x' only has one 'y')</p> <p>Use the vertical line test on graphs.</p>	<p>1. Determine if the graph is a function.</p> 	<p>2. Determine if the table represents a function.</p> <table border="1" data-bbox="1174 402 1279 559"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>-1</td> <td>4</td> </tr> <tr> <td>0</td> <td>5</td> </tr> <tr> <td>2</td> <td>6</td> </tr> <tr> <td>-1</td> <td>7</td> </tr> </tbody> </table>	x	y	-1	4	0	5	2	6	-1	7
x	y												
-1	4												
0	5												
2	6												
-1	7												
2. Create an input-output table for a function.	<p>"x-y chart" – choose the x-values & plug them in</p>	<p>3. Create an input-output table for the function $f(x) = 2x - 3$. Use $x = -2, -1, 0, 1, \text{ and } 2$.</p>	<p>4. Create an input-output table for the function $f(x) = 6$. Use $x = -2, -1, 0, 1, \text{ and } 2$.</p>										
3. Evaluate functions.	<p>$f(x)$ function notation $f(2)$ means you must substitute a '2' for every 'x' in the function!</p>	<p>5. Evaluate $f(4)$</p> $f(x) = x^2 + 3x - 1$	<p>6. Find the value of $f(x) = 4x - 2$ when $x = -1$.</p>										
		<p>7. a. Find $f(5)$.</p> <p>b. Find the value of x for $f(x) = 2$.</p> <p>c. What is the maximum and minimum? Write in function notation.</p> 											

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?

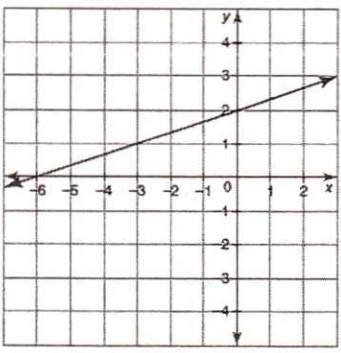
11. Air Force One can travel 630 miles per hour. Let h be the number of hours traveled. Write a function rule that represents the total number of miles traveled. Then, determine how many miles Air Force One can travel in 4 hours.

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

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

Change in y
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)

7. Calculate the y-intercept

Point where graph crosses y-axis
(0, b)

8. Graph a linear function

$$y = mx + b$$

*Always graph the y-intercept first and then use slope to determine next point.

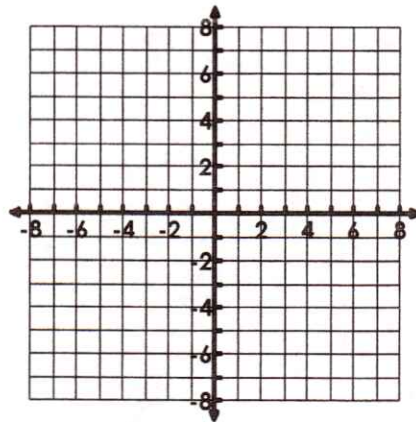
14. Calculate the slope. Be sure to include units.

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

16. Name the y-intercept:

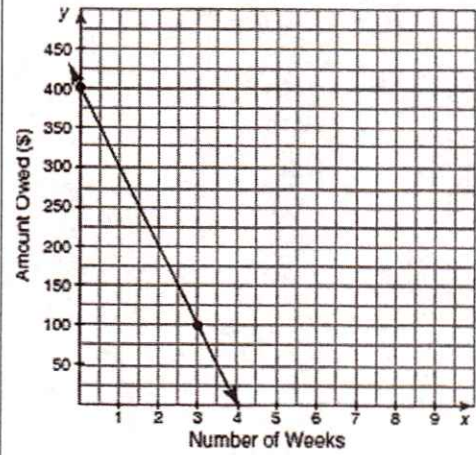
x	0	1	3	4
y	8	6	2	0

18. Graph: $f(x) = -\frac{2}{3}x + 6$



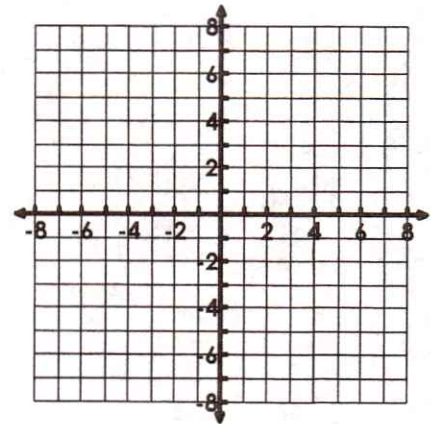
15. Calculate the slope. Be sure to include units.

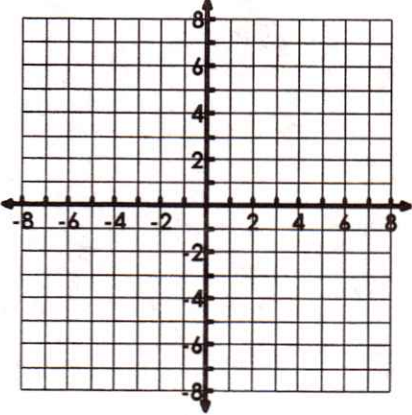
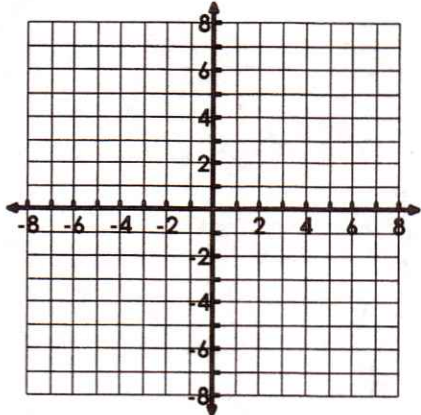
Television



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?

19. Graph: $-4x + 2y = 12$



		<p>20. Graph $x = -3$. Name slope & y-intercept</p> 	<p>21. Graph $y = 4$. Name slope & y-intercept.</p> 
<p>9. Convert from standard to slope intercept form</p>	<p>Slope Intercept: $y = mx + b$</p> <p>Standard: $Ax + By = C$</p>	<p>22. Solve for y: $4x + 2y = 8$</p>	<p>23. Determine the slope and y-intercept: $3x - 6y = -12$.</p>
<p>10. Convert from slope intercept to standard form</p>	<p>Slope Intercept: $y = mx + b$</p> <p>Standard: $Ax + By = C$ (no negative A values; multiply by -1 if necessary)</p>	<p>24. Put in standard form: $y = 3x + 4$</p>	<p>25. Put in standard form: $y = -2/3x - 5$</p>

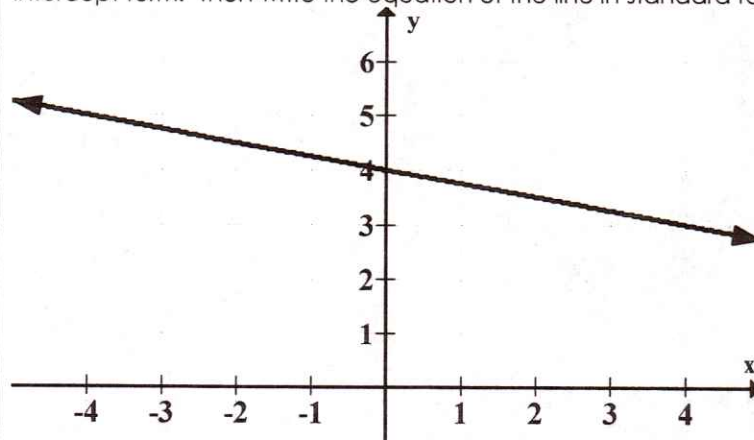
$$y = mx + b$$

28. Write the equation of the line that has a slope of 5 and y-intercept at (0, 3).

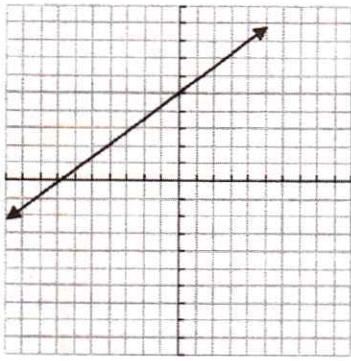
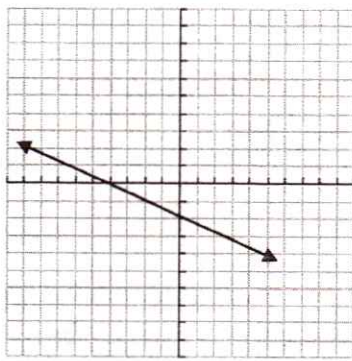
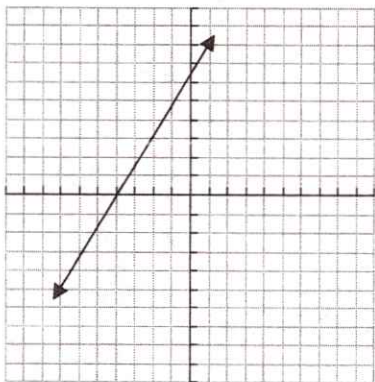
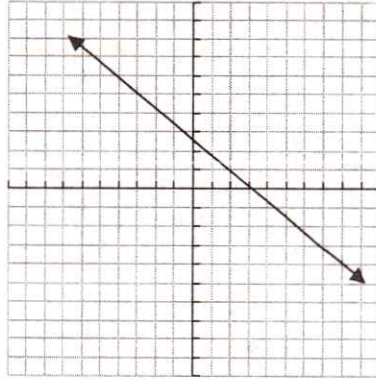
29. Write the equation of the line that corresponds to the following table:

x	0	3	6	9
y	-6	-4	-2	0

30. Write the equation of the line that corresponds to the graph below in slope-intercept form. Then write the equation of the line in standard form.



11. Write the equation of a line.

<p>12. Determine the characteristics of linear functions</p>	<p>Domain: input, x-values, "left to right"</p> <p>Range – output, y-values, "bottom to top"</p> <p>x-intercept(s): where the graph crosses the x-axis.</p> <p>y-intercept(s): where the graph crosses the y-axis.</p> <p>maximum/minimum: the highest or lowest points.</p> <p>Increase: where the graph looks like it's going "up hill".</p> <p>Decrease: where the graph looks like it's going "down hill".</p> <p>Constant: where the graph is horizontal.</p> <p>End Behavior: "left side" $x \rightarrow -\infty$ "right side" $x \rightarrow \infty$</p> <p>What direction do the left and right arrows go?</p>	<p>31. Find the listed characteristics of the graph below.</p>  <p>Domain: _____ Range: _____</p> <p>Interval of Increase: _____</p> <p>Interval of Decrease: _____</p> <p>Maximum: _____ Minimum: _____</p> <p>End Behavior: As $x \rightarrow \infty$, $f(x) \rightarrow$ _____ As $x \rightarrow -\infty$, $f(x) \rightarrow$ _____</p> <p>Zeros: _____ X-Intercept: _____ Y-Intercept: _____</p>	<p>32. Find the listed characteristics of the graph below.</p>  <p>Domain: _____ Range: _____</p> <p>Interval of Increase: _____</p> <p>Interval of Decrease: _____</p> <p>Maximum: _____ Minimum: _____</p> <p>End Behavior: As $x \rightarrow \infty$, $f(x) \rightarrow$ _____ As $x \rightarrow -\infty$, $f(x) \rightarrow$ _____</p> <p>Zeros: _____ X-Intercept: _____ Y-Intercept: _____</p>
<p>13. Determine where the graph is positive and negative</p>	<p>For what x-values is the graph in the positive (above x-axis) region and in the negative (below x-axis) region?</p>	<p>33. Give the inequality for the parts of the graph that are positive and negative.</p>  <p>Positive: _____</p> <p>Negative: _____</p>	<p>34. Give the inequality for the parts of the graph that are positive and negative.</p>  <p>Positive: _____</p> <p>Negative: _____</p>
<p>14. Characteristics of functions without a graph.</p>	<p>X-intercept: (a, 0) Y-intercept (0, b)</p>	<p>35. Which functions have an interval of increase? How do you know?</p> <p>A. $f(x) = 2x - 5$ B. $f(x) = -\frac{1}{2}x + 4$ C. $f(x) = -3x - 1$ D. $f(x) = 3x + 9$</p>	<p>36. What are the x and y intercepts for the equation $3x - 6y = 24$?</p>

15. Creating Equations from a Word Problem	<p>Standard Form: $Ax + By = C$ *Total *Two different amounts</p> <p>Slope Intercept Form: $y = mx + b$ *Rate *Starting Amount/ One Time Fee</p>	<p>37. Ed has \$36 to buy paints and brushes for a school project. Jars of paint cost \$4 each. The brushes are \$2 each. Write an equation to determine the combination of brushes and paint he can buy. If he buys 3 jars of paint, how many brushes can he buy?</p>	<p>38. Gail orders CDs for \$8 each plus a total shipping cost of \$5. Write an equation to determine the total cost of purchasing CDs. If Gail spent \$53, how many CDs did she order?</p>															
16. Comparing Linear Functions	<p>Determine what the slope and y-intercepts are and interpret them in a real world context before comparing.</p>	<p>39. Which function has the greater rate of change and y-intercept?</p> <p>Function 1: $y = 2x + 3$ Function 2: (0, 4), (1, 8), (2, 12)</p>	<p>40. The table to the right shows the distance (in meters) Runner A and Runner B ran at different time intervals. Which runner has a faster average speed from 20 to 31 seconds?</p> <table border="1" data-bbox="997 991 1466 1155"> <thead> <tr> <th>Time</th> <th>Runner A</th> <th>Runner B</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>9</td> <td>120</td> <td>120</td> </tr> <tr> <td>20</td> <td>168</td> <td>213</td> </tr> <tr> <td>31</td> <td>287</td> <td>287</td> </tr> </tbody> </table>	Time	Runner A	Runner B	0	0	0	9	120	120	20	168	213	31	287	287
Time	Runner A	Runner B																
0	0	0																
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17. Arithmetic Sequences	<p>Explicit form: $a_n = a_1 + (n - 1)d$</p> <p>Recursive form: $a_1 =$ $a_n = a_{n-1} + D$</p>	<p>41. Write the EXPLICIT and RECURSIVE formula for the following sequence: 5, 9, 13, 17...</p>	<p>42. Write the EXPLICIT and RECURSIVE formula for the following sequence: -3, -9, -14, -19...</p>															

43. Given the sequence -3, 0, 3, 6... find the following term values:

$$a_{19} =$$

$$a_{32} =$$

44. Given the sequence 7, 15, 23, 31... find the following term values:

$$a_6 =$$

$$a_{24} =$$

45. Determine the first four terms of the sequence:

$$a_1 = 7$$

$$a_n = a_{n-1} - 3$$

46. Determine the first four terms of the sequence:

$$a_1 = -4$$

$$a_n = a_{n-1} + 5$$