Algebra 1   Name:_____
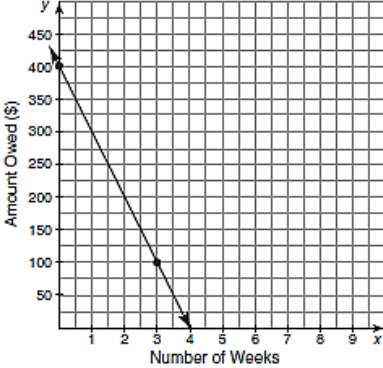Applications of Linear Functions   Date:_____ Block:_____

Unit 6: Applications of Linear Functions Review Guide

What you need to know & be able to do	Things to remember	Examples	
1. Characteristics of functions without a graph.	X-intercept: (a, 0) Y-intercept (0, b)	a. What are the x and y intercepts for the equation 2x + 5y = 15	b. What are the x and y intercepts for the equation 3x – 6y = 24?
2. Characteristics in the Real World	Domain: x- values Range: y-values X-intercept: (a, 0) Y-intercept (0, b) Slope: Change in y over change in x	a. Calculate the slope and y-intercept. Interpret them in terms of the problem scenario. <table><tr><th>Number of Balloons</th><th>Total Cost of Balloons (in Dollars)</th></tr><tr><td>2</td><td>6</td></tr><tr><td>4</td><td>12</td></tr><tr><td>6</td><td>18</td></tr><tr><td>8</td><td>24</td></tr></table>	b. Calculate the slope, x-intercept, and y-intercept. Interpret them in terms of the problem scenario. Television

c. Frank is planning to drive his car on the Overseas Highway, the scenic road that connects the islands in the Florida Keys to the Florida mainland. Answer the following questions:

DISTANCE TO BE TRAVELED
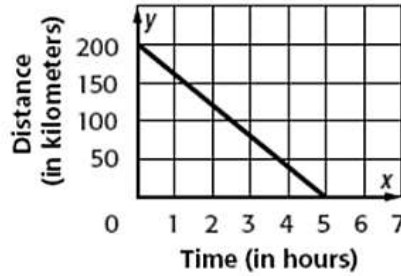
a. What is the x-intercept? Explain what it means in terms of the problem scenario.

b. What is the y-intercept? Explain what it means in terms of the problem scenario.

c. What is the slope? Explain what it means in terms of the problem scenario.

d. What is the domain and range?

e. Create an equation in slope intercept form to represent the scenario.

| 3. Creating Equations from a Word Problem | Standard Form:
$Ax + By = C$
*Total
*Two different amounts

Slope Intercept Form:
$y = mx + b$
*Rate
*Starting Amount/
One Time Fee | a. 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? | b. 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? |

| 4. Comparing Linear Functions | a. Which function has the greater rate of change and y-intercept?

Function 1: y = 2x + 3
Function 2: (0, 4), (1, 8), (2, 12) | b. 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?

| Time | Runner A | Runner B |
|------|----------|----------|
| 0 | 0 | 0 |
| 9 | 120 | 120 |
| 20 | 168 | 213 |
| 31 | 287 | 287 | |

c. Which function has the greatest y-intercept?

Function A: f(x) = 3x   **Function B:** 2x + 3y = 12

Function C: a line that has a slope of 2   **Function D:**
And passes through (1, -4).
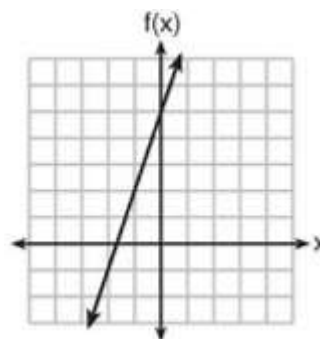
d. Two people, Adam and Bianca, are competing to see who can save the most money in one month. Use the table and the graph below to answer the following questions: (Assume each is following a linear function in his or her saving habit.)

Adam's Function:

Number of Days (x-axis)
Total Amount of Money in Dollars (y-axis)
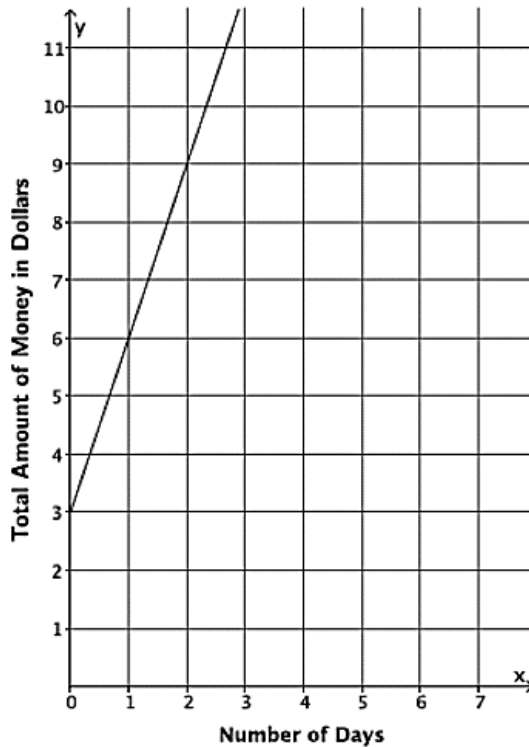
Bianca's Function:

Input (Number of Days)	Output (Total amount of money in dollars)
5	17
8	26
12	38
20	62

a. Who is saving more per month?

b. Who started with more money?

e. Mr. Rich recently planted a crop of money trees in his garden. Create an equation to represent each tree. Which tree is growing the fastest and which tree started out as the tallest?

A.

The first tree was five inches tall when planted. It has grown four inches every month since being planted.

B.

Measurements were taken of the second tree and given below:

Months	0	2	3	5
Height	3	12	16.5	25.5

C.

Money Tree Growth

Height in Inches (y-axis)
Time in Months (x-axis)