Courtney's Cookie Shop!

Name: _____

Part 1: Courtney was baking cookies to sell for Valentine's Day. She wanted to make sugar cookies and chocolate cookies. Courtney went to the store and bought 32 cups of sugar and 40 cups of flour. The sugar cookies need four cups of sugar and six cups of flour. The chocolate cookies need two cups of sugar and two cups of flour. Courtney will sell her sugar cookies for \$7.50 a batch and her chocolate cookies for \$3.50 a batch.

- 1. What is revenue? How is revenue different than profit?
- Courtney wants to make as much money as possible. Unfortunately there are some factors that inhibit her from making an unlimited amount of cookies. Using what you know about her cookie business, what are at least two reasons that prevent her from making an unlimited amount of cookies?
- 3. Use the table below to help show Courtney 3 possible ways she can bake her cookies. An example is given.

Batches of Sugar Cookies baked	Batches of Chocolate cookies baked	Total amount of flour used	Total amount of sugar used	Total Revenue assuming all cookies will sell
1	1	8	6	\$11.00
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- 4. If Courtney decides to use all the baking materials to bake only sugar cookies, how many batches of cookies can she produce? Use the next to last row in the table above to calculate her total revenue. Complete this process again if she only bakes chocolate cookies.
- 5. How many batches of each cookie should Courtney bake if she is looking to maximize her revenue? Explain in detail the method you used to find this answer.

How can we guarantee Courtney that she has made the correct number of batches to maximize the profit?

1. Using the first quadrant of the coordinate plane, plot your five points from your chart in part 1. Using your classmates, find 5 to 7 different points to plot.



- 2. Create an equation that will represent the total amount of sugar used based on the number of batches of cookies baked. (use *x* for batches of sugar cookies, *y* for batches of chocolate cookies and *z* for the total amount.) (hint: use the fourth column of your table in part 1 to help you get started)
- 3. Create an equation that will represent the total amount of flour used based on the number of batches of cookies baked. (use *x* for batches of sugar cookies, *y* for batches of chocolate cookies and *z* for the total amount.) (hint: use the third column of your table in part 1 to help you get started)
- 4. Substitute the total amount of sugar/flour bought at the store in your equations above. Graph both of these equations on the coordinate plane above.
 - a. What do you notice about your plotted points?
 - b. Where do the two lines intersect? Is this point significant to the problem?