

Name(s): Carl Nyberg

Date: Summer 2013

Lesson Title: Charting a Budget

Text: Financial Algebra (10 -3)

Lesson Length: 5 days (3 days lab, 2 days of instruction) - 50 Minute Periods

CCSS-M:

N-VM6, A-REI10, F-IF4, F-IF5, F-IF7a

Mathematical Process:

MP2 Reason Abstractly and Quantitatively, MP4 Modeling, MP5 Use Tools Strategically.

Objectives:

Visualize and interpret a budget using a pie chart, a bar graph, a line graph, and a budget line graph.

Write the equation to represent a budget line.

Language Objectives:

Common Misconceptions:

- Percentage is equal to degree measure.
- Graphing the Budget Line using intercepts.

Materials:

Protractor

Ruler

Graph Paper

Note Paper

Plan:

Day 1 - 3 (lab): Use the 10 - 3 Lab to explore charting a budget.

Day 4 (math):

1. Begin by placing example 2's monthly expenses on the overhead or by providing copies to the students. Do not have them look in the book because they will have the answers.
2. Ask the students to talk with a neighbor and decide what a pie chart represents. They should come up with something about it represents a whole budget or 100% of a budget.
3. Next talk to the students to get them to identify that the percentages in the budget represent the percentage of a whole circle. The goal is to get students to understand that 40% of a circle is not 40 degrees. Next ask them how you calculate 40% of something. This is a skill that occurs in almost every section of the book. They should say take .4 times the total.
4. Because we want to convert from percent to degrees on a circle, ask them how many degrees are in a total circle. When they give you 360, have them multiply 360 time .4 and find that it is 144 degrees that would need to be measured for that sector of the pie chart.
5. Have the students calculate the rest of the angle measures to complete the pie chart. Then give them protractors and have them create the pie chart. Talk to students about rounding and the potential of not having totals that equal 360 degrees or percentages that don't equal 100%.
6. Give the students an example to work on in pairs where they are given dollar amounts only. They will then have to discuss how to find the percentage that is represented by the dollar amounts and then calculate the angle measures. This should take 7 - 10 minutes.

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7. If there is any time available or for homework assign problems 4 and 5 from 10-3 applications in the text book.

Day 5 (math):

1. Students will be familiar with line and bar graphs, so have them just complete the check your understandings for examples 4 and 5. If there are troubles completing these questions address them as needed.
2. Put the scenario for example #6 on the overhead or provide to students. Again if they have the text book they will have the answers.
3. Have a student read the scenario and explain what the question is asking the students to complete.
4. Give the students 2 minutes to discuss with a neighbor what the equation for the original scenario might be. Get some examples, the form of the equation is not important because it should be a linear equation.
5. Work out with the group which equation is correct, or if nobody has a correct equation work with them to get the correct equation in standard form. $Ax + By = C$.
6. Next show the students how to graph the equation by using the x and y intercepts.
7. Show the students how to find combinations that are on the line and are therefore within the specified budget.
8. Give the students 10 -12 minutes to work on the extension question that asks about a 20% decrease in the coffee budget. They should go through the process of creating the second equation and graphing it on the same axis so that they can see the change in the amount of coffee that can be bought.
9. Assign Problems 7, 8, and 14 for homework. This does not include a line graph, but you can add problems if desired.