

Yikes! Five Hundred People Are Coming to Dinner!

Your class is in charge of the fall festival dinner. Last year, five hundred people attended and purchased a dinner. Most people who cook know how to double or triple a recipe. But how would you make a recipe for five hundred people? In this project, you will take your favorite recipe and adjust it so that you are able to feed five hundred people. Also, you will calculate the ingredients' cost for this gigantic meal. The teacher will divide you into small groups. Each group should work on the calculations for one recipe for the dinner. For example, one group can work on a chili recipe, one group can work on a cornbread recipe, and one group can work on a dessert recipe.

Project Tasks

1. Choose your favorite recipes from any cookbook, or find them on the Internet. It is recommended that you choose a recipe that can act as the main meal, like spaghetti, lasagna, chili, pancakes, and so on. Then you can just add bread and a dessert.
2. Print each recipe, and note the number of servings for each.
3. Divide 500 by the number of each recipe's servings. This result is the scale-up (or multiplier) factor.
4. Now multiply each ingredient by this scale-up factor, and record the new amounts of each ingredient in a spreadsheet on your computer or iPad. Fractions and mixed numbers can be easily multiplied if they are converted into decimals first.
5. Fill in the spreadsheet with your ingredients and amounts needed. To demonstrate the calculations, a sample is provided using 700 people. For example, your recipe makes 4 servings: $700 \div 4 = 175$, so your scale-up factor is 175, and you must multiply each ingredient by 175. If your recipe for 4 calls for 1.5 teaspoons of salt, the recipe for 700 should use $1.5 \times 175 = 262.5$ teaspoons of salt.
6. Convert each unit of measure to the type of unit used to purchase the ingredient. For example, 262.5 teaspoons of salt may be required, but you purchase salt in ounces.
 - ◆ Since 3 teaspoons = 1 tablespoon, $262.5 \div 3 = 87.5$ tablespoons.
 - ◆ Since 16 tablespoons = 1 cup, $87.5 \div 16 = 5.47$ cups, which is slightly less than 5.5 or $5\frac{1}{2}$ cups.
 - ◆ Since 1 cup = 8 ounces, $5.5 \times 8 = 44$ ounces.

Note: Add comments to cells in your spreadsheet explaining your conversions to make it easier for others to understand your spreadsheet.

You may use the following conversions.

For dry measure:

- $3 \text{ teaspoons } (t) = 1 \text{ tablespoon } (T)$
- $8 \text{ tablespoons } (T) = \frac{1}{2} \text{ cup } (c)$
- $16 \text{ tablespoons } (T) = 1 \text{ cup } (c)$

For liquid measure:

- 8 ounces (oz) = 1 cup (c)
- 16 ounces (oz) = 1 pint (pt)
- 2 cups (c) = 1 pint (pt)
- 2 pints (pt) = 1 quart (qt)
- 4 quarts (qt) = 1 gallon (gal)

For weight:

- 16 ounces (oz) = 1 pound (lb)

Do the following to calculate the approximate cost of the ingredients for this dinner.

1. Write each ingredient amount in terms of the amount you would purchase. You will have to estimate for some of the ingredients. Fill in these amounts in the table provided. For example, if we continue the scenario of 700 people, 5.5 cups of salt are needed for a recipe for 700 people. Salt is sold in 26-ounce boxes, so we need to convert to ounces.
 - ♦ Since 1 cup = 8 ounces, $5.5 \times 8 = 44$ ounces.
 - ♦ Since 26 ounces = 1 box of salt, $44 \div 26 = 1.69$ boxes. However, you cannot purchase part of a box of salt, so you need to purchase 2 boxes.
 - ♦ Salt costs \$0.49 per box, so our cost will be $2 \times 0.49 = \$0.98$.
2. Calculate each ingredient's cost. You may have to make a trip to the grocery store or check online sales advertisements to obtain the prices. Record these costs in your spreadsheet.
3. Calculate the cost per person. Divide the total cost of the dinner by the number of people.

After completing a spreadsheet for the recipe, switch spreadsheets, recipes, and ingredient lists with another group to see if its calculations and formulas are accurate and logical. Consider:

- Are there ingredients that really may not be necessary? Justify your answer.
- Are there alternative ingredients that could be substituted to save money?

After all groups have completed their recipe spreadsheets and had them checked, you and your classmates will determine the best price to charge each guest for the dinner.

1. On the class computer with a projector, the teacher will show a new spreadsheet to complete this calculation.
2. One member from your group should go up and type his or her recipe and cost per person in a row.
3. You or any classmate can volunteer to create the formula to add up all recipe costs.
4. Discuss the following questions with your classmates to determine how much money you all want to make from this dinner.
 - ♦ What will we use the money for?
 - ♦ Should we double or triple the cost of the meal to decide on how much guests will pay for the meal? What is a fair price?
 - ♦ What is the difference in gross profit and net profit?

Scoring Rubric

	1 SIGNIFICANT REVISION NEEDED	2 SOME REVISION NEEDED	3 PROFICIENT	4 EXCEEDS EXPECTATIONS
Objective 1: Students will create a spreadsheet with formulas to calculate a scale-up of a recipe to feed five hundred people.	<p>Most formulas and calculations are not correct even with assistance from the teacher.</p> <p>No comments are placed in cells that needed explanations of unit conversions.</p>	<p>Some formulas and calculations are not correct even with assistance from the teacher.</p> <p>Many comments are missing in cells that needed explanations of unit conversions.</p>	<p>All formulas and calculations are correct with some assistance from the teacher.</p> <p>Comments are placed in cells that needed explanations of unit conversions.</p>	<p>All formulas and calculations are correct on the first attempt with no assistance.</p> <p>Comments are clearly placed in cells that needed explanations of unit conversions.</p>
Objective 2: Students will evaluate each other's spreadsheets for accuracy and logic.	<p>Groups do not check another group's spreadsheet to see if calculations and formulas are accurate and logical.</p> <p>Groups do not evaluate whether there are ingredients that really may not be necessary or do not justify their answers.</p> <p>Groups do not identify any alternative ingredients that could be substituted to save money.</p>	<p>Groups incorrectly check another group's spreadsheet to see if calculations and formulas are accurate and logical.</p> <p>Groups incorrectly evaluate whether there are ingredients that really may not be necessary or do not adequately justify their answers.</p> <p>Groups incorrectly identify alternative ingredients that could be substituted to save money.</p>	<p>Groups check another group's spreadsheet to see if calculations and formulas are accurate and logical.</p> <p>Groups evaluate whether there are ingredients that really may not be necessary and justify their answers.</p> <p>Groups identify alternative ingredients that could be substituted to save money.</p>	<p>Groups accurately check another group's spreadsheet to see if calculations and formulas are accurate and logical.</p> <p>Groups accurately evaluate whether there are ingredients that really may not be necessary and fully justify their answers.</p> <p>Groups accurately identify alternative ingredients that could be substituted to save money.</p>