

Glendale Union High
School District



CULINARY MATH WORKBOOK

The knowledge of mathematics is an important part of even the most simple culinary experiences.

Name: _____

Hour: _____ **Date:** _____



© 2007 by GUHSD. Published in 2007 with grant funds made possible by West-MEC and Western Maricopa Tech-Prep Consortium. The information presented in this workbook is intended for use by GUHSD Culinary Arts staff and students.

Contents

Math Terms and Applications.....	2
Formula Reference Review.....	9
Steps for Calculating Yield Percents.....	11
Yield Percent Workbook.....	12
Converting and Yielding Recipes.....	13
Recipe Size Conversion Workbook.....	15
Converting and Yielding More Recipes.....	16
Extra Recipes to Convert.....	18
Enrichment Project.....	22
Units of Measure and Equivalency Charts.....	25

Math Terms and Applications

ADDITION

A mathematical operation based on “putting things together”

Application: Adding ingredient amounts, such as 1 cup + 1 cup, also when doubling recipes (1 cup doubled)

ALGORITHM

A set of step-by-step instructions for completing a task

Application: Following a recipe is the same as an *algorithm*, as you are following step by step instructions to complete a task.

APPROXIMATION

A value that is sufficiently exact for a specified purpose

Application: When you guess how much salt to add to a soup to make it flavorful, you're making an *approximation*

AREA

The 2-dimensional space enclosed by the perimeter is called the area

Application: The *area* can be discussed when showing a sheet pan, rectangle in size, has an area of 18" x 26"



ASCENDING ORDER

A listing in which numbers or terms are organized in increasing value

Application: Measurements are an *ascending order*: 1 cup, 1 pint, 1 quart, ½ gallon, 1 gallon

CALCULATION

An action, process, or result of a mathematical computation

Application: Adding ingredient amounts, such as 1 cup + 1 cup, also when doubling recipes (1 cup doubled)



CAPACITY

A measure of how much (volume) a container can hold

Application: The amount of soup a pot will hold is the *capacity* of the pot

Math Terms and Applications

COMMON DENOMINATOR Any nonzero number that is a multiple of the denominators of two or more fractions

Application: The *common denominator* of $\frac{1}{2}$ & $\frac{3}{4}$ is 2, because 2 can divide evenly into both 2 and 4, when you're multiplying ingredients and adding $\frac{1}{2}$ to $\frac{3}{4}$, you must find the least *common denominator*.

CONE A three-dimensional figure generated by rotating a right triangle about one of its legs

Application: A pastry bag is in the shape of a *cone*



CUBE The third power of a number; a regular 3-dimensional figure having six congruent square faces

Application: When talking about knife skills it is important to mention *cubes*, for $\frac{1}{2}$ " dice, 1" dice, the shape of the dice is a *cube*

DEGREE A unit of measure for angles based on dividing a circle into 360 equal parts; or a unit of measure for temperature

Application: The unit of measurement for temperature, i.e. 450 *degrees* F.

DENOMINATOR the number of equal parts into which a whole is divided (i.e., in the fraction $\frac{3}{4}$, 4 is the denominator)

Application: In $\frac{3}{4}$ cup flour, 4 is the *denominator*

DIAMETER A chord that contains the center of the circle

Application: The *diameter* of a 9" cake pan is measured by a "line" from one side of the pan to the other, including the center to the circle.



Math Terms and Applications

Difference

The result of a subtraction

Application: When you cut the recipe in half, and it states you need 2 cups of flour, you subtract 1 cup of flour to leave you with 1 cup of flour.

Elapsed Time

Time between two events

Application: When you set a timer for bread for 8 minutes. The time that goes by from when you set it until it goes off is the elapsed time.



ESTIMATE

A close rather than exact answer

Application: When you guess how much oregano to add to a sauce to make it flavorful, you're *estimating*

FRACTION

A number in the form $\frac{a}{b}$, where b is not zero

Application: *Fractions* are used most commonly with measurements, such as $\frac{1}{2}$ teaspoon, $\frac{1}{2}$ pound, $\frac{3}{4}$ cup.

FRACTIONAL PART

Part of a whole or part of a group that is less than a whole

Application: The part of a whole, such as $\frac{3}{4}$ cup is part of a (1) whole cup

HEIGHT

The perpendicular distance to a base from a vertex or between bases

Application: The use of *height* is very important when dealing with plate presentation, how high the food sits on the plate.



Math Terms and Applications

HYPOTHESIS The if clause of a conditional statement

Application: What will happen if vinegar is added to baking soda, and why do we want that result in baking?

LINE OF SYMMETRY A line that divides a figure into two congruent parts that are mirror images of each other

Application: When cutting/portioning cakes, pies, each piece needs to be cut with the same angle, and therefore same size pieces. By using a *line of symmetry*, each piece will look exactly the same (symmetrical).



MASS Matter within an object

Application: You may be able to think of *mass* and density at the same time. Meringue has very little *mass* (there's not much to it), the *mass* of a chocolate bar is more of that than meringue.

MAXIMUM The greatest value

Application: After the bones, skin and fat is taken off of a chicken, the meat is the *maximum* that is useable.



MIDPOINT A point on a geometric figure halfway between two points

Application: When cutting a cake, finding the *midpoint* (middle) of the circle is critical to ensure proper portioning.



Math Terms and Applications

MIXED NUMBER A number that is equal to the sum of a whole number and a fraction

Application: Using $1\frac{1}{2}$ cups is a *mixed number*. There are whole numbers and fractions used to express a number.

MULTIPLICATION The operation of repeated addition (i.e., 4×3 is the same as $4+4+4$)

Application: *Multiplication* is used all the time when extending recipes

OUTCOME One of the possible events in a probability situation

Application: An *outcome* is what is obtained when you finish making a recipe.

PREDICTION Use of base information to produce an approximation of change or result

Application: A *prediction* can be made about how a recipe will come out based on a picture of the recipe.



PROBABILITY The measure of the likelihood of an event occurring

Application: There is a strong *probability* that a cake will be overcooked or burned if it is left in the oven longer than the recipe says.

PROPORTION The statement of equality between two ratios

Application: When plating food, there should not be a giant amount of rice and a very small amount of vegetable with a moderate serving of protein, instead they should be in *proportion*, meaning vegetable and starch should be equal in size and those should be about $\frac{1}{2}$ the size of the protein of the dish. (6oz protein, 3 oz vegetable, 3 oz starch)

Math Terms and Applications

RATIO A comparison of two values by division; a ratio can be expressed as a to b,

$$\frac{a}{b}, \text{ or } a:b$$

Application: Ratios are used when cooking rice. For every 2 parts of liquid, there is one part of uncooked rice. That ratio would be 2:1 or 2 to 1. So, if there was 2 cups of liquid, there would be 1 cup of rice. 4 cups liquid:2 cups rice, 3 cups liquid:1½ c. rice.

RECTANGLE A quadrilateral with two pairs of congruent, parallel sides and four right angles (square, parallelogram, quadrilateral, polygon)

Application: The shape of a sheet pan is a *rectangle*.

SAMPLE A part of the total population; used in statistics to make predictions about the characteristics of the entire group

Application: If there is a slice taken from a cake, that slice is a sample of the whole cake.

SCALE (1) An instrument used for weighing; (2) a system of marks at fixed intervals used in measurement or graphing

Application: A *scale* is used for measuring ingredients and other food products.



SOLID A 3-dimensional figure

Application: A cake that has been baked would be an example of a *solid*, where as cake batter would be an example of a liquid.

Math Terms and Applications

SYMMETRY A correspondence in size, form, and arrangement of parts, related to a plane, line, or point; for example, a figure that has line symmetry has two halves that coincide if folded along a line of symmetry

Application: Symmetry is used in cutting cake to make sure that one piece of cake is the same size as the next and the next, etc. To make both halves of the cake look exactly the same after it has been cut.

UNIT PRICE The price of something for one unit of measure

Application: If the unit price desired was price per ounce, an example would be: A gallon of milk is \$4. There are 128oz in a gallon, so the unit price would be figured by dividing \$4.00 by 128 ounces and the unit price would be \$.03/ounce

VOLUME The measure of the capacity of a three-dimensional figure, measured in cubic units

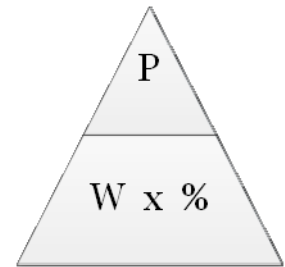
Application: A container holds soup. The maximum capacity of that container would be the volume that it would hold.



Formula Reference Review

THE PERCENT TRIANGLE

The following triangle is a tool used to find, whole, or percent.



EPQ, APQ, AND YIELD PERCENT TRIANGLE

The following triangle is a tool used to find the as-purchased quantity, edible portion quantity, and yield percent. It is identical to the Percent Triangle, although the application differs.

Part = Edible portion quantity (EPQ)

Whole = As-purchased quantity (APQ)

Percent = Yield percent (Y%)



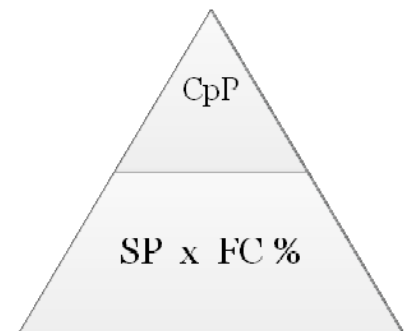
THE COST PER PORTION, SELLING PRICE, AND FOOD COST

The following triangle is a tool used to find the cost per portion, selling price, and food cost percent. It is identical to the Percent Triangle, although the application differs.

Part = Cost per portion (CpP)

Whole = Selling price (SP)

Percent = Food cost percent (FC)



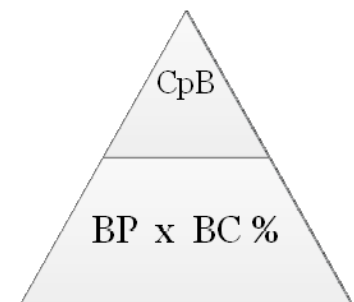
THE COST PER BEVERAGE, SELLING PRICE, AND BEVERAGE COST

The following triangle is a tool used to find the cost per beverage, selling price, and beverage cost percent.

Part = Cost per beverage (CpB)

Whole = Beverage price (BP)

Percent = Beverage cost percent (BC)



CALCULATING THE AS-PURCHASED QUANTITY (APQ)

$$APQ = \frac{\text{Edible portion quantity (EPQ)}}{\text{Yield percent (in decimal form)}}$$

CALCULATING THE EDIBLE PORTION QUANTITY (EPQ)

$$EPQ = \text{As - Purchased quantity (APQ)} \times \text{Yield percent (in decimal form)}$$

DETERMINING COST PER UNIT

$$\text{Cost per unit} = \frac{\text{As - purchased cost}}{\text{Number of Units}}$$

CALCULATING TOTAL COST (TC)

Total cost may be calculated using the following formula: $TC = \text{Number of units} \times \text{Cost per unit}$

FORMULA FOR EDIBLE PORTION COST

$$EPC = \frac{\text{As - purchased cost (APC)}}{\text{Yield percent (in decimal form)}}$$

DETERMINING FOOD COST PERCENT

The food cost percent is the percent of the selling price that pays for the ingredients. The formula for the food cost percent is

$$\text{Food cost percent} = \frac{\text{Food Cost}}{\text{Food Sales}} \text{ or } \frac{\text{Cost per portion}}{\text{Selling price}}$$

DETERMINING COST PER PORTION

The cost per portion can be calculated with the following formula:

$$\text{Cost per Portion} = \frac{\text{Total recipe cost}}{\text{Numbers of portions}}$$

DETERMINING SELLING PRICE

The cost per portion is used to calculate the selling price based on a desired food cost percent:

$$\text{Selling price} = \frac{\text{Cost per portion}}{\text{Food cost percent (in decimal form)}}$$

BEVERAGE COSTING

$$\text{Beverage cost percent} = \frac{\text{Beverage cost}}{\text{Beverage sales}}$$

Steps for Calculating Yield Percents

Calculating the Recipe Conversion Factor (RCF)

A recipe conversion factor (RCF) is a number that represents the relationship between the new and old recipe yields. There are three NOs of calculating RCF:

1. $\frac{\text{New recipe yield } N}{\text{Old recipe yield } O} = \text{RCF}$ = Recipe conversion factor
Be careful not to invert this – you will get ON instead of NO!
2. NO rounding of the recipe conversion factor.
3. NO units – the recipe conversion factor carries no unit.

The Steps for Using the EPQ, APQ, and Yield Percent Triangle

STEP 1: Determine what you are looking for: EPQ, APQ, or yield percent.

STEP 2: To find the edible portion quantity (EPQ):

Cover the EPQ for edible portion quantity.

APQ and Y% are side by side. This directs you to multiply the APQ by the yield percent. (Remember to change the percent to a decimal by dividing by 100 before multiplying.)

To find the as-purchased quantity (APQ):

Cover the APQ for as-purchased quantity.

EPQ is over Y%. This directs you to divide the EPQ by the yield percent. (Remember to change the percent to a decimal by dividing by 100 before multiplying.)

To find the yield percent:

Cover the Y% for yield percent.

EPQ is over APO. This directs you to divide the EPQ by the APQ and multiply the answer by 100 to convert it to the yield percent.

Steps for Calculating the Yield Percent (continued)

There are three steps necessary to calculate the yield percent:

STEP 1: To calculate the yield percent for the potatoes, you must first identify the EPQ and the APQ

STEP 2: Determine if the units are the same before calculating the yield percent.

STEP 3: Substitute the weights of the EPQ and APQ into the formula and solve.

EXAMPLE 1: Fifty pounds of potatoes have been purchased. If the potatoes are weighed after cleaning and peeling, there will be approximately 42.5 pounds of cleaned potatoes and 7.5 pounds of trim (loss).

STEP 1: Identify the EPQ and the APO.

APQ = 50 pounds (whole potatoes)

EPQ = 42.5 pounds (cleaned and peeled potatoes)

STEP 2: Determine if the units are the same before calculating the yield percent. In this problem, both the EPQ and the APQ are in pounds. We can continue.

STEP 3: Substitute the weights of the EPQ and APQ into the formula and solve.

$$\text{Yield percent} = \text{EPQ}/\text{APQ} = 42.5 \text{ lb}/50 \text{ lb} = 0.85 \times 100 = 85\%$$

The calculations indicate that the yield percent for potatoes is 85 percent.

It is important to recognize that the 50 pounds of potatoes or the as-purchased quantity represents 100 percent. After cleaning and peeling the potatoes there will be the cleaned, peeled potatoes and the peels (trim). The 42.5 pounds of cleaned potatoes (the edible portion quantity) represents 85 percent of the as-purchased quantity; this is the yield percent. The percent that is not usable in this application is the trim loss percent, in this case 15 percent ($100\% - 85\% = 15\%$). The yield percent and the trim loss percent add up to 100 percent and the EPQ and trim add up to the APQ.

Yield Percent Workbook

Directions: Leave your answers in decimal form. Final answers should be truncated at the ten-thousandths place value (10.456789 should be left as 10.4567). Percent answers should be truncated at the whole percent (78.6% becomes 78%)

1. You purchased 25 pounds of sweet potatoes. After cleaning the potatoes, there are 6.25 pounds of peels. What is the yield percent?

2. The trim-loss percent for kohlrabi is 45 percent. What is the yield percent?

3. You purchase 10.375 pounds of apples in order to have enough apples to make four pies. Each pie is to contain 2 pounds 1 ounce of cleaned apples. What is the yield percent for the apples?

4. You have 8 ½ pounds of white pistachios that you want to use for ice cream. You are left with 4 ¼ pounds after you shell the nuts. What is the yield percent for the pistachio nuts?

PROJECT FOR YIELD PERCENT

You are making strawberry pie. The recipe calls for 1 ½ pints of sliced strawberries. If the yield percent for strawberries is 91% and 1 cup of strawberries weighs 7 ounces, how many pounds of strawberries should you order?

Converting and Yielding Recipes

It is a simple matter to double or cut a recipe in half. Many times this can be done mentally with little or no effort. However, when it becomes necessary to change a recipe from 12 to 20 portions or from 50 to 28 it appears to be more complicated. Actually, the procedure is the same for both and involves a fairly simple function of finding a working factor and multiplying each ingredient quantity by the working factor.

The first step in converting a recipe is to find the working factor. This is done as follows:

Step 1: Divided the yield desired by the original recipe yield.

$$\frac{\text{New yield}}{\text{Old yield}} = \text{Working factor}$$

Step 2: Multiply each ingredient quantity by the working factor.

$$\text{Working factor} * \text{old quantity} = \text{new recipe (desired quantity)}.$$

Example 1: The following recipe yields 12 dozen hard rolls. It must be converted to yield 9 dozen rolls.

Ingredients for 12 dozen rolls	Amount of Conversion	Amount needed to yield 9 dozen rolls
7lb 8oz bread flour	$\frac{3}{4}$	5lb. 10 oz
3 oz salt		2 $\frac{1}{4}$ oz
3 $\frac{1}{2}$ oz sugar		2 $\frac{5}{8}$ oz
3 oz shortening		2 $\frac{1}{4}$ oz
3 oz egg whites		2 $\frac{1}{4}$ oz
4 lb. 8 oz water		3lb 6 oz
4 $\frac{1}{2}$ oz yeast, compressed		3 $\frac{3}{8}$ oz

Step 1: Find the working factor.

$$\frac{9 \text{ dozen new yield}}{12 \text{ dozen new yield}} = \frac{3}{4} \text{ Is the working factor}$$

Step 2: Convert all ingredients.

Example: 7 pounds 8 ounces of bread flour. Remember to convert to the same units, 16 ounces in a pound. $(7 * 16) + 8 = 120$ ounces

Example: 3 $\frac{1}{2}$ ounces of sugar = $7/2$ ounces

Step 3: Multiply all ingredients by the working factor ($3/4$).

Example: bread flour -120 ounces * $\frac{3}{4}$ = 90 ounces

Example: sugar - $7/2$ oz * $\frac{3}{4}$ = $21/8$

Step 4: Convert new amounts back to pounds and ounces

Example: bread flour – 90 ounces divided by 16 = 5 pounds and 10 ounces

Example: sugar – $21/8$ = $2 \frac{5}{8}$ ounces

Recipe Size Conversion Workbook

Directions: Recipe conversion is a common occurrence in a food-service operation. Whether you are converting some recipes so that you may give them to customers or print them in cooking magazines, or changing recipes to serve at a very large banquet, you will find that this approach saves time and maintains the integrity of the recipe. Use the recipe conversion factor (RCF) and the three NOs of RCF to determine your answer to the following problems. It is not necessary to convert the answers to more measurable units.

1. A recipe for corn chowder makes one hundred and fifty 6-ounce servings. You will be making forty 8-ounce servings. What is the recipe conversion factor?

2. A recipe for potato salad yields 5 gallons of potato salad. The recipe calls for 2 quarts of sour cream. How many cups of sour cream should you add if you want to make 1 $\frac{1}{2}$ gallons of potato salad?

3. A recipe for red fruit compote makes 10 servings of $\frac{3}{4}$ cup each. If you want to make 40 servings of $\frac{1}{2}$ cup each, what is the recipe conversion factor?

4. You are making cheese-filled Danish. A recipe for baker's cheese filling makes 4 $\frac{1}{2}$ pounds of filling. The recipe calls for 2 $\frac{1}{2}$ pounds cheese, $\frac{1}{4}$ ounce vanilla, and other ingredients. Each Danish is to contain 1 $\frac{3}{4}$ ounces of the cheese filling. If you are making 25 dozen Danish, how much of the cheese and how much of the vanilla should you use?

PROJECT FOR RECIPE SIZE CONVERSION

Explain why the recipe conversion factor is always greater than 1 when increasing a recipe and always less than 1 when decreasing a recipe.

Converting and Yielding More Recipes

1. The following recipe yields 50 portions of curried lamb. Convert it to yield 150 portions

Ingredients for 50 portions	Amount of conversion	Amount needed to yield 150 portions
18 lb. lamb shoulder, boneless, cut into 1-inch cubes		
2 ½ gallons water		
2 lb. butter or shortening		
1 lb. 8 oz. flour		
1/3 cup curry powder		
2 qt. tart apples, diced		
2 lb. onions, diced		
½ tsp. ground cloves		
2 bay leaves		
1 tsp. marjoram		
Salt and pepper to taste		

2. The following recipe yields 100 portions of Hungarian goulash. Convert it to yield 75 portions.

Ingredients for 100 portions	Amount of conversion	Amount needed to yield 75 portions
36 lb. beef chuck or shoulder, diced into 1-inch cubes		
1 ¼ oz. garlic, minced		
1 lb. 4 oz. flour		
1 ¼ oz. chili powder		
10 oz. paprika		
2 lb. tomato puree		
2 gal. brown stock		
4 bay leaves		
¾ oz. caraway seeds		
3 lb. 8 oz. onions, minced		
Salt and pepper to taste		

3. The following recipe yields nine 8-inch lemon pies. Convert it to yield six 8-inch pies.

Ingredients for 9 pies	Amount of conversion	Amount needed to yield 6 pies
4 lb. water		
3 lb. 6 oz. granulated sugar		
½ oz. salt		
3 oz. lemon gratings		
1 lb. water		
8 oz. cornstarch		
12 oz. egg yolks		
1 lb. 6 oz. lemon juice		
4 oz. butter, melted		
Yellow color, as needed		

4. The following recipe yields 12 dozen hard rolls. Convert it to yield 48 dozen rolls.

Ingredients for 12 dozen rolls	Amount of conversion	Amount needed to yield 48 dozen rolls
7 lb. 8 oz. bread flour		
3 oz. salt		
3 ½ oz. granulated sugar		
3 oz. shortening		
3 oz. egg whites		
4 lb. 8 oz. water (variable)		
½ oz. yeast, compressed		

5. The following recipe yields 8 dozen soft dinner rolls. Convert it to yield 5 dozen rolls.

Ingredients for 8 dozen rolls	Amount of conversion	Amount needed to yield 5 dozen rolls
10 oz. granulated sugar		
10 oz. hydrogenated shortening		
1 oz. salt		
3 oz. dry milk		
4 oz. whole eggs		
3 lb. 12 oz. bread flour		
2 lb. water		
5 oz. yeast, compressed		

Chili Barbecued Chicken



Directions: Review the recipe below. You are provided with the ingredient lists and amounts to yield 4 servings. How would you increase the ingredient amounts to yield more servings? Complete the following table:

Portions	4	8	12	24	72
teaspoons chili powder	2				
fluid ounces cider vinegar	4				
tablespoons garlic	1				
teaspoons hot pepper sauce	2				
teaspoons salt	2				
lemons, juiced	2				
fluid ounces	2				
whole chicken (cut into 8 pieces)	1				

1. Combine the chili powder, vinegar, salt, garlic, hot pepper sauce and water in a stainless steel bowl.
2. Add the chicken pieces and stir to coat the chicken with the marinade. Cover and marinate under refrigeration for 2 to 24 hours.
3. Arrange the chicken on a baking rack, skin side up, and bake in a 400 degree oven for approximately 30 minutes or until done. Alternatively grill the chicken pieces on a gas grill or wood grill until done.

Variation:

Baste the chicken 5 minutes before it is fully cooked with 2 teaspoons of hot pepper sauce combined with 2 tablespoons melted butter.

Serve with fluffy white rice, mixed leaf salad and a seasonal vegetable of your choice.

Tip

Drain away the fat and keep the lovely sticky juices. It's delicious to either pour them over the chicken or stir them into the rice to give it some more flavor.

Crepes



Directions: Review the recipe below. You are provided with the ingredient lists and amounts to yield 30 servings. How would you increase the ingredient amounts to yield more servings? Complete the following table:

Yield	15	30	60	90	120	150
whole eggs		6				
egg yolks		6				
fluid ounces water		12				
fluid ounces milk		18				
ounces sugar		6				
teaspoons salt		1				
ounces flour		14				
ounces unsalted butter, melted		5				
clarified butter		as needed				

Method

1. Whisk together the eggs, egg yolks, water and milk. Add the sugar, salt, and flour; whisk together. Stir in the melted butter. Cover and set aside to rest for at least 1 hour before cooking.
2. Heat a small sauté or crepe pan; brush lightly with clarified butter. Pour in 1-1½ oz of batter; swirl to coat the bottom of the pan evenly.
3. Cook the crepe until set and light brown, approximately 30 seconds. Flip it over and cook for a few seconds longer. Remove from the pan. Repeat this process until all the batter is used.
4. Cooked crepes may be used immediately or covered and held briefly in a warm oven. Crepes can also be wrapped well in plastic wrap and refrigerated for 2-3 days or frozen for several weeks.

Rice Pilaf



Directions: The following ingredients will yield 8 servings - 6 fluid ounces of clarified butter, 6 ounces of bay leaves, 6 ounces of peeled, finely diced onions, 6 fluid ounces of olive oil, 1 pound of long grain rice, 32 ounces of boiling chicken stock and salt to taste.

Organizing data (or ingredients) into a table is an important mathematical skill; tables allow for greater understanding. Use the ingredient list above to create a table (similar to the tables on page 17 & 18.)

Portions	8	16	48	72
----------	---	----	----	----

You have listed the ingredients to yield 8 servings. How would you increase the ingredient amounts to yield more servings? Complete the table to yield 16, 48 and 72 servings.

Method

1. Heat the butter and oil in a heavy sautior or saucepot.
2. Add the onion and bay leaf and sauté until the onion is tender, but not brown.
3. Add the rice and stir to coat it completely with the hot fat. Do not allow the rice to brown.
4. Pour in the boiling stock and season with salt.
5. Cover the pot tightly and place it in a 350 degree oven. Bake until the liquid is absorbed and the rice is fluffy and tender, approximately 18-20 minutes.
(An alternative is to let simmer on low heat on the stove for about 20 minutes)
6. Transfer the cooked rice to a hotel pan and fluff the rice with a fork. Remove the bay leaf and keep the rice hot for service.

Cream Scones



Directions: The following ingredients will yield 24 scones – one pound of all-purpose flour, 1½ ounces granulated sugar, one teaspoon baking soda, one teaspoon baking powder, one teaspoon salt, four ounces unsalted, cold butter, two egg yolks and eleven ounces of half-n-half.

Organizing data (or ingredients) into a table is an important mathematical skill; tables allow for greater understanding. Use the ingredient list above to create a table (similar to the tables on page 17 & 18.)

You have listed the ingredients to yield 24 scones. How would you increase the ingredient amounts to yield more servings? Complete the table to yield 48, 72 and 96 scones.

Procedure:

1. Combine all ingredients using the biscuit method.
2. Roll out the dough to a thickness of about ½ inch. Cut as desired.
3. Bake at 400 degrees for approximately 10 minutes.
4. Brush the tops with butter while hot.

Variations:

Add ½ cup raisins, sultanas or currants to the dry ingredients (24 scones).

Enrichment Project

The word is out regarding the reputation of your school's culinary program; no one can beat your expertise in the kitchen! You have been asked to cater an event for forty-five people. The client has requested a picnic menu of barbequed chicken, a salad of your choice and your famous cream scones with fresh, in-season berries. Your responsibilities include: finalizing the menu, determining the amount of food needed and establishing the per-person costs for the event.



1. Menu – The client has requested your Chili Barbequed Chicken (see recipe on page 17) and your cream scones (see recipe on page 20) with fresh, in-season berries. In addition, the client has requested a salad of your choice (green leaf, pasta or fruit). Research available recipes and select an appropriate salad to accompany the chicken. Using desktop publishing software, create a printed menu for the event.
2. Menu Calculations – Review the three recipes to determine how much food you will need to serve the forty-five guests. It is acceptable to prepare slightly over and have extra food, but make sure everyone has enough food to eat. Next, prepare a shopping list for the ingredients, using printed food ads, online food ads and/or a trip to the grocery store. Make sure all items are listed only once on your shopping list - combine like ingredients. Determine the total food costs for the event. (Use the table provided on pages 21 & 22 or create an Excel spreadsheet.)
3. Pricing the Event –
 - a. How much did you spend on groceries? _____
 - b. You want to pay the culinary students \$15/hour. Calculate the total cooking time and staff needed to prepare the dishes and set-up the event. What are the labor costs?

 - c. Calculate a 20% catering staff tip on the total bill (food costs + wages).

 - d. The client has requested a total per-person charge for the event. How much would the picnic lunch cost per person, based on forty-five people?

4. Present your final work (menu and recipes) and catering costs bid.

UNITS OF MEASURE AND EQUIVALENCY CHARTS

COMMON FOOD SERVICE MEASURES AND ABBREVIATIONS

Common Term	Abbreviation
Teaspoon	t, tsp
Tablespoon	T, tbsp
Cup	C, c
Pint	pt
Quart	qt
Gallon	G, gal
Fluid ounce	fl oz
Milliliter	mL
Liter	L
Ounce	oz
Pound	lb. #
Gram	g
Kilogram	kg
Each	ea
Bunch	bu
To taste	tt

U.S. STANDARD WEIGHT EQUIVALENT

1 pound = 16 ounces

METRIC PREFIXES

kilo = 1,000 base units deka = 10 base units deci = 0.1 base unit centi = 0.01 base unit milli = 0.001 base unit	
Weight (Mass) 1 gram = 1,000 milligrams 1,000 grams = 1 kilogram	Volume (Liquid) 1,000 milliliters = 1 liter
Weight Conversion between U.S. Standard Measure and Metric 1 ounce = 28.35 grams 1 kilogram = 2.21 pounds	Volume Conversion between U.S. Standard Measure and Metric 1 liter = 33.8 fluid ounces

VOLUME EQUIVALENTS

Volume Measures	Volume Equivalents
1 tablespoon	3 teaspoons
1 cup	16 tablespoons
1 pint	2 cups
1 quart	2 pints
1 gallon	4 quarts

ADDITIONAL VOLUME EQUIVALENTS

Volume Measures	Equivalent in Fluid Ounces
1 tablespoon	½ fluid ounce
1 cup	8 fluid ounces
1 pint	16 fluid ounces
1 quart	32 fluid ounces
1 gallon	128 fluid ounces