

Culinary Management

Applied Problem Booklet

General Math



Applied Problems – Fractions

1. Bob added up the hours on his time card. He got a total of $35\frac{6}{8}$ hours. Reduce his answer to lowest terms.
2. A No. 10 scoop has a level measure of $\frac{2}{5}$ cup, while a No. 12 scoop has a level measure of $\frac{1}{3}$ cup. Which is larger?
3. A chef added the total weight of steak that wasn't used for a catering job. She got an answer of $17\frac{1}{2}$ pounds. Change the chef's answer to mixed number form.
4. A cook is comparing two recipes for coffee cake. He wants to use the one that has the least amount of cinnamon in it. Recipe One calls for $\frac{2}{3}$ tsp. while Recipe Two calls for $\frac{3}{5}$ tsp. Which recipe should he pick?
5. Which measured quantity of salt is greater? $\frac{3}{8}$ tsp or $\frac{2}{5}$ tsp?
6. Put these measuring cups in order from smallest (left) to largest (right): $\frac{7}{8}$, $\frac{3}{4}$, $\frac{5}{6}$, $\frac{3}{5}$
7. If one pound of lamb costs \$2 per pound, how much does $4\frac{1}{2}$ pounds cost?

8. From a 20 lb supply of pork picnic, $\frac{1}{3}$ is lost through trimming. How many pounds are lost through trimming?

9. If a recipe calls for $\frac{2}{3}$ cup of water, $\frac{2}{3}$ cup of milk, and $\frac{2}{3}$ cup of vegetable oil, what is the total amount of liquid used in the recipe?

10. For 3 weeks in a row, Mary put $3\frac{3}{4}$ hours of overtime each week. What is the total hours of overtime she put in?

11. A party of 20 people will be served drawn fish. If each serving of fish is to be $\frac{3}{4}$ lb, how many pounds of fish will have to be ordered?

12. If you have 6 ounces of baking powder left, and a recipe calls for $\frac{3}{8}$ ounce, how many times could you make this recipe before you have to buy more baking powder?

13. From a 38 lb supply of ground pork, how many servings of meatballs, each $\frac{7}{16}$ lb, can be obtained from the supply?

14. A short-order chef worked $32\frac{3}{4}$ hrs during a 5-day workweek. How many hours per day did this chef average?

15. From a $17\frac{1}{2}$ -lb supply of beef, $2\frac{1}{8}$ lbs are lost through trimming. How much beef is left after trimming?
16. What is the total amount of vegetables in a serving of mixed vegetables if it is made up of $\frac{1}{8}$ lb of corn, $\frac{1}{16}$ lb of peas, and $\frac{1}{16}$ lb of diced carrots?
17. Find the total weight of these ingredients: Butter— $\frac{3}{4}$ lb, pastry flour— $3\frac{1}{2}$ lb, sugar $1\frac{1}{2}$ lb, and salt $\frac{1}{16}$ lb.
18. Find the total hours worked by this chef: Day 1— $7\frac{1}{4}$ hours, day 2— $6\frac{1}{2}$ hours and day 3— $8\frac{3}{4}$ hours.
19. Over the course of a day, a cook used $7\frac{3}{4}$ lbs of flour for rolls, $5\frac{1}{4}$ lbs for bread, and $3\frac{3}{8}$ lb for bread sticks.
- How much flour did the chef use?
 - If there was a 28 lb supply of flour at the start of the day, how much is left at the end of the day?

Applied Problems – Decimals

1. a. Express $\frac{7}{16}$ lb. as a decimal accurate to 3 decimal places.

b. Express $\frac{3}{8}$ lb. as a decimal accurate to 1 decimal place.
2. Which amount of seasoning is greater?
 - a. 0.0153 lbs
 - b. 0.0155 lbs
3. When increasing the yield of a recipe, a cook finds that he will need 0.679 cup of milk. Write this amount as a fraction with a denominator of 8.
4. Arrange these amounts of salt from smallest (left) to largest (right):
0.4 0.045 0.405 0.45 0.415
5. Karen knows that she must divide 5 ounces of salt by 16 to convert it to pounds. Do the division and round the answer to the nearest tenth (one decimal place).
6. Round 2.431 lb of baking powder into fraction form with a denominator of 16.
7. Convert $3\frac{5}{8}$ cups of milk into decimal form.
8. Express 0.8 lbs. of sirloin strip in fraction form reduced to lowest terms.

9. After converting a recipe to a lower yield, a cook finds that she needs 0.901 lbs. of chocolate. Write this decimal quantity as a fraction with a denominator of 8.
10. After calculating the cost of a recipe per serving, Ray gets an answer of \$0.5258. Round his answer to the nearest penny.

11. Find the total amount owed for this order:

Quantity	Description	Unit Price	Total
3 cases	#10 cans whole tomatoes	\$5.60	
2 cases	20 lobs. Spaghetti	\$4.95	
3 cases	#10 cans catsup	\$16.34	
2 cases	32 lbs. margarine	\$15.36	

GRAND TOTAL _____

12. Joe gets paid \$6.75 per hour.
- If he works 40 hrs. per week for two weeks, how much will his gross pay be?
 - If \$44.55 are deducted for taxes what is his take-home pay?
13. If you have a 78-ounce supply of bread dough, how many 2.5-ounce dinner rolls can be made from this supply?
14. Find the cost for this vegetable mix:
- 2.5 lb. box of corn @ \$0.47 per pound
 - 5 lb. box of lima beans @ \$0.51 per pound

15. How much roast can be served if you started with an 18 lb. roast and 2.75 lbs. are lost when cooked?
16. Find the total weight of these ingredients: Butter: 0.75 lbs, Pastry Flour: 3.5 lbs, Sugar: 1.5 lbs, Salt: 0.0625 lbs, Dry milk: 0.1875 lbs.
17. If it cost \$4.25 to make a supply of garden salad, and 32 salads can be made from this supply, what is the cost per serving?
18. Find the average number of customers for the past week at Tino's Supper Club:
Monday: 44
Tuesday: 48
Wednesday: 67
Thursday: 75
Friday: 109
19. For a party of 170 people, it is decided that each person should receive a 0.25 lb serving of peas. How many boxes of frozen peas should be ordered if each box weighs 2.5 lbs.?
20. 31 people ordered a prime rib special that weighed 0.75 lbs.
- What was the total weight of prime rib ordered?
 - If these prime rib specials were \$11.50 per dinner, how much money did the restaurant take in?

Applied Problems – Percents

1. An 18 lb strip sirloin of beef is purchased and 3.8 lbs are trimmed away. What percent of the original sirloin is lost through trimming? (Round to nearest tenth.)
2. Ted's Place has a seating capacity of 85 people. If 40% of this capacity is reserved for smoking, how many smokers could be seated at Ted's?
3. If a 15% tip automatically added to the bills of all parties over 12 people, what would be the tip on a bill of \$96.00?
4. Mary made a \$500 down payment on a new refrigeration unit. This \$500 is 20% of the price of the unit. Find the price of the refrigeration unit.
5. The River City Cafe pays \$240 per month for electricity. If this is 3% of the monthly sales, what are the monthly sales in dollars?
6. 27 out of 48 evening customers ordered the fish special. What percent of customers order the special? (Round to nearest tenth.)
7. If an invoice for kitchen supplies totals \$486.75, how much tax is owed on the purchase? Assume a 5% tax rate.
8. If a 14-ounce package of lunchmeat advertises a 4% fat content, how many ounces are fat?

9. 9. A surf-n-turf dinner usually sells for \$15.95. On certain occasions it is offered for \$12.15. What is the percent discount when it is on sale? (Round to nearest whole number.)

10. An end-of-the-month inventory reveals that only two cans of tomato paste of tomato paste are left. If this is 25% of the original amount in stock at the start of the month, how many cans were in stock originally?

11. From a 245 lb side of beef, about 12% was sirloin. How many pounds of sirloin were obtained from this side of beef? (Round to nearest tenth.)

12. Due to road construction, a restaurant owner estimates that she has a 35% drop-off in sales per month. If she normally takes in \$12,500 per month, how much is she making with the road construction?

13. All customers that mention an advertisement in the local paper will receive a 5% discount on their meals. If a families' bill came to \$29.40 before the discount was applied, what will be the amount they owe?

14. 42% of a fresh catfish's total weight is edible after the fish has been skinned and boned. If a catfish weighs 5.25 pounds, how much fish will be left after cleaning? (Round to nearest tenth.)

15. 15% of blue crab's total weight yields picked meat. If 12 pounds of picked crab meat is needed, how many total pounds of blue crab is needed?

16. From 42 pounds of whole watermelon, 19 pounds of edible watermelon was removed from the rind. Find the edible fruit rate from the watermelons. (Round to nearest tenth.)

17. From 60 pounds of fresh cherries, 49 pounds of cherries remained after pitting. Find the edible fruit rate for the cherries. (Round to nearest tenth.)

18. Only 28% of corn's total weight yields edible corn. If 64 pounds of corn are needed for a banquet, find how much total fresh corn must be purchased. (Round to nearest whole number.)

19. Twelve pounds of green bell peppers yield 82% edible vegetables. Find the yield of peppers after coring the peppers. (Round to nearest tenth.)

20. Determine the price of a meal where a tip of \$3.50 was 20% of the price of the meal.

Work through the “Yield Factors” tutorial on the Internet. Ask your instructor for the URL to access this information. Print a page from the tutorial to show that you looked at it.

Applied Problems – Measurement

Calculating Recipe Cost

Work through the “Compute Recipe Cost” tutorial on the Internet. Ask your instructor for the URL to access this information. Print a page from the tutorial to show that you looked at it.

One important math skill you will need in your program is to be able to accurately calculate the cost of a recipe. After all, being aware of your costs helps you stay within budget, accurately estimate the cost of catering jobs, and setting menu pricing. The skills you have learned in this section (changing units of measure) will be an important part of calculating recipe costs.

To stay organized, it might be a good idea to do your work on a recipe cost worksheet like the completed one shown below:

Recipe Name: <i>Tomato Sauce for Pasta</i>				
Portions: <u>3 qts.</u>		Portion Size _____		
Ingredient	Amount	Cost	Cost per Unit	Total Item Cost
Olive Oil	1 pt	\$6.13/gal	\$0.76625/pt	\$0.77
Onion	8 oz	\$0.21/lb	\$0.013125/oz	\$0.11
Carrot	8 oz	\$0.23/lb	\$0.014375/oz	\$0.12
Celery	8 oz	\$0.15/lb	\$0.009375/oz	\$0.08
Tomatoes	1 #10 can	\$2.34/can	\$2.34/can	\$2.34
Garlic	2 cloves	\$0.01/clove	\$0.01/clove	\$0.02
Total Recipe Cost:				\$3.44

Let's analyze the steps involved to calculate recipe cost:

- 1st** List the *ingredients* and the *amount* required of each.
- 2nd** Each product that you use comes in a certain size when you buy it. List the *purchase price* and the *amount/quantity* as purchased.
- 3rd** For each product, find the cost per unit. *The units listed here should be the same as the units called for by the recipe.*
- 4th** Find the total cost of each item in the recipe.
- 5th** Add up the cost of each item in the recipe to determine the recipe cost.

EXAMPLE

O.K., let's take a sample recipe and calculate the cost.

<p><i>Fresh Mushroom Sauce</i> <u>Ingredients Required:</u> Mushrooms: 4 lb Margarine: 8 oz Onions: 2 oz Flour: 4 oz Chicken Stock: 2 qt Milk: 2 c</p>

The purchase price and size for each item:

Mushrooms: \$1.49/8 oz

Margarine: \$0.49/lb

Onions: \$0.21/lb

Flour: \$0.25/lb

Chicken Stock: \$0.24/oz of base (1 oz of base used for each qt of stock desired)

Milk: \$1.80/gal

Transfer the above information onto the recipe cost worksheet shown below:

Recipe Name: <i>Fresh Mushroom Sauce</i>				
Portions: 1 gal		Portion Size _____		
Ingredient	Amount	Cost	Cost per Unit	Total Item Cost
Mushrooms	4#	\$1.49/8 oz	\$2.98/lb	\$11.92
Margarine	8 oz	\$0.49/lb	\$0.030625/oz	\$0.25
Onions	2 oz	\$0.21/lb	\$0.013125/oz	\$0.03
Flour	4 oz	\$0.25/lb	\$0.015625/oz	\$0.06
Chicken Stock	2 qt	\$0.24/oz base	\$0.24/qt	\$0.48
Milk	2 c	\$1.80/gal	\$0.1125/c	\$0.23
Total Recipe Cost:				\$12.97

As you can see the Cost per Unit and the Total Item Cost columns have also been filled in. The calculations needed to determine the numbers in the last two columns are shown below. Look at each one carefully and refer back to the completed recipe cost worksheet.

***The recipe calls for 4 lbs. of mushrooms. Mushrooms cost \$1.49 for 8 oz. Since the amount of mushrooms required is given in lbs, the cost of the mushrooms should be rewritten in terms of *cost per lb*:

$$\frac{\$1.49}{8 \text{ oz}} \times \frac{16 \text{ oz}}{1 \text{ lb}} = \frac{1.49 \times 16}{8} = \frac{23.84}{8} = \$2.98/\text{lb}$$

The total cost of the mushrooms must be: 4 lb x \$2.98/lb = **\$11.92**

***The recipe calls for 8 oz of margarine. Margarine costs \$0.49/lb. Since the amount of margarine required is given in ounces, the cost of the margarine should be expressed in terms of *cost per ounce*:

$$\frac{\$0.49}{\text{lb}} \times \frac{1 \text{ lb}}{16 \text{ oz}} = \frac{0.49 \times 1}{16} = \$0.030625/\text{oz}$$

The total cost for the margarine needed for the recipe must be: 8 oz x \$0.030625/oz = \$0.245 = **\$0.25**

***The recipe calls for 2 oz of onions. Onions cost \$0.21/lb. This should be rewritten as *cost per ounce*:

$$\frac{\$0.21}{\text{lb}} \times \frac{1 \text{ lb}}{16 \text{ oz}} = \$0.013125/\text{oz}$$

The total cost of the onions needed for this recipe must be: 2 oz x \$0.013125/oz = \$0.02625 = **\$0.03**

***The recipe calls for 4 oz of flour. Flour costs \$0.25/lb.
Cost per ounce: \$0.15625/oz

The total cost of flour needed for this recipe: 4 oz x \$0.015625/oz = \$0.0625 = **\$0.06**

***The recipe calls for 2 qts of chicken stock. The base used to make it costs \$0.24/oz. (Note: 1 oz of base is used to make 1 qt of stock) Therefore, chicken stock costs \$0.24/qt.

The total cost to make 2 qts of chicken stock must be: 2 qts x \$0.24/qt = **\$0.48**

***The recipe calls for 2 cups of milk. Milk costs \$1.80/gal
The cost per cup: \$0.1125/c

The total cost of 2 c of milk for this recipe must be: 2 c x \$0.1125/c = \$0.225 = **\$0.23**

The total recipe cost is found by adding all of the ingredient costs together:
\$11.92 + 0.25 + 0.03 + 0.06 + 0.48 + 0.23 = **\$12.97**

EXAMPLE

Complete the recipe cost worksheet below.

Recipe Name: <i>Creole Sauce</i>				
Portions 1 gal		Portion Size _____		
Ingredient	Amount	Cost	Cost per Unit	Total Item Cost
Bacon	4 oz	\$1.69/lb		
Onion	8 oz	\$0.21/lb		
Carrots	8 oz	\$0.23/lb		
Tomatoes	4 qt	\$2.34/gal		
Tomato Puree	2 qt	\$4.68/gal		
Ham Bones	1 lb	\$1.46/lb		
Celery	4 oz	\$0.85/lb		
Green Pepper	2 oz	\$1.89/lb		
Garlic*	1 tsp	\$0.25/bulb		
TOTAL RECIPE COST				\$ _____

*Note: Assume that 1 bulb of garlic equals 25 teaspoons.

Answers to the worksheet above:

Ingredient	Cost per Unit	Total Item Cost
Bacon	\$0.105625/oz	\$0.42
Onion	\$0.013125/oz	\$0.11
Carrots	\$0.014375/oz	\$0.12
Tomatoes	\$0.585/qt	\$2.34
Tomato Puree	\$1.17/qt	\$2.34
Ham Bones	\$1.46/lb	\$1.46
Celery	\$0.053125/oz	\$0.21
Green Pepper	\$0.118125/oz	\$0.24
Garlic	\$0.01/tsp	\$0.01

TOTAL RECIPE COST: **\$7.25**

REVIEW:

As you can see, there really isn't any difficult mathematics involved in calculating recipe cost. To recap, let's list the steps required:

- 1.) List the required ingredients and the quantity needed of each.
- 2.) Each product has a given cost for a given size. Write those figures down next.
- 3.) Rewrite the product's cost per unit to match the units specified by the recipe, if necessary.
- 4.) Find the total cost of each ingredient.
- 5.) Add all the individual ingredient costs together to find the *recipe cost*.

Practice Problems

To gain experience in calculating recipe cost, try the following problems. Fill in the Cost per Unit and the Total Item Cost columns, then determine the TOTAL RECIPE COST

1.

Recipe Name: <i>Egg Noodles</i>				
Portions _____		Portion Size _____		
Ingredient	Amount	Cost	Cost per Unit	Total Item Cost
Flour	1 lb	\$0.25/lb	[]	[]
Eggs	5	\$0.59/doz	[]	[]
Olive Oil	1/2 oz	\$6.13/gal	[]	[]

TOTAL RECIPE COST \$ _____

2.

Recipe Name: <i>White Bread</i>				
Portions: 4 loaves		Portion Size: 1 lb loaves		
Ingredient	Amount	Cost	Cost per Unit	Total Item Cost
Yeast	2 oz	\$1.76/lb	[]	[]
Bread Flour	2.5 lb	\$0.25/lb	[]	[]
Salt	1 oz	\$0.45/lb	[]	[]
Sugar	1.5 oz	\$9.42/25 lb	[]	[]
NFDM	2.5 oz	\$3.89/25 oz	[]	[]
Shortening	1.5 oz	\$3.81/6 lb	[]	[]

TOTAL RECIPE COST \$ _____

Use Multiplication Factors for Recipe Conversion

Work through the “Recipe Conversions” tutorial on the Internet. Ask your instructor for the URL to access this information. Print a page from the tutorial to show that you looked at it.

Many times you will find that an often-used or favorite recipe has a yield that is too high or too low for your particular needs. In those cases, you need to convert all the recipes ingredients either up or down to so they produce the desired yield.

To change the yield of a recipe, we will multiply each ingredient in the recipe by a **working factor**.

To find the working factor, divide the yield desired by the yield of the original recipe:

$$\text{YIELD DESIRED} \div \text{ORIGINAL YIELD} = \text{WORKING FACTOR}$$

Once you have the working factor, multiply every ingredient by this number in order to find the amount necessary for the new recipe.

Example: If a recipe has a yield of 45 and you need a yield of 135, what will be the working factor needed to convert the recipe?

Divide yield desired by original yield: $135 \div 45 = 3$

To continue with the problem you would multiply every ingredient by **3** to find the amounts required.

Example: Find the working factor when you have a recipe that has a yield of 50 but you need a yield of 40.

Yield desired divided by original yield: $40 \div 50 = 0.8$

Every ingredient must be multiplied by this number, **0.8**, in order to convert to the lower yield.

Converting Recipes using the Working Factor

Example: This is a partial list of ingredients for a lemon pie. The yield is 9 pies. Convert this recipe so that it yields only 6 pies. *If you want to, you may convert any decimal quantities to fractional form (for example, to the nearest 1/4th, or 1/8th unit).* Refer to Unit 2, Section 1, if you have forgotten how to do this. When you do problems like these for the quiz or test, the computer will want the answer in **decimal form**.

4 lb. water
3 lb. 6 oz. granulated sugar
1/2 oz. salt
3 oz. lemon gratings
12 oz. egg yolks

First, find the *working factor* first: $6 \div 9 = 0.666... = \mathbf{0.67}$

Now multiply each ingredient by the working factor, **0.67**:

Water: $4 \text{ lb.} \times 0.67 = 2.68 \text{ lbs}$

As a fraction (if you go to the nearest 1/8th), $2.68 \text{ lbs} = \mathbf{2 \frac{5}{8} \text{ lbs.}}$

Sugar: The amount of sugar is described in mixed units: 3 lb. 6 oz.

Change this all to ounces: $3 \text{ lbs} \times 16 = 48 \text{ oz} + 6 \text{ oz} = 54 \text{ oz}$

Now multiply by the working factor: $54 \times 0.67 = 36.18 \text{ oz}$

As a fraction (to the nearest 1/8th), $36.18 \text{ oz.} = \mathbf{36 \frac{1}{8} \text{ oz.}}$

If you wish, you can rewrite this in mixed units again: $36 \frac{1}{8} \text{ oz.} = \mathbf{2 \text{ lb. } 4 \frac{1}{8} \text{ oz.}}$

Salt: $\frac{1}{2} \text{ oz.} \times 0.67 = 0.5 \text{ oz.} \times 0.67 = 0.335 \text{ oz.}$

As a fraction (to the nearest 1/8th), $0.335 \text{ oz.} = \mathbf{\frac{3}{8} \text{ oz.}}$

Lemon gratings: $3 \text{ oz.} \times 0.67 = 2.01 \text{ oz}$

Since this amount is very close to **2 oz.** we'll just go with that.

Egg yolks: $12 \text{ oz.} \times 0.67 = 8.04 \text{ oz}$

Once again, this amount is very close to a whole number: **8 oz.**

As you can see from this example, some accuracy was lost when you rounded the working factor and when you changed the decimal answers to the nearest 1/8th of a unit. In most cases, this shouldn't cause a problem.

Example: This recipe yields 9 dozen cornmeal muffins. Convert it to yield 45 dozen.

Partial List of Ingredients

- 3 lb. 8 oz. granulated sugar
- 1 1/2 oz. salt
- 6 oz. powder milk
- 1 lb. 8 oz. whole eggs
- 2 lb. water

First, find the *working factor* first: $45 \div 9 = 5$

Now multiply each ingredient by the working factor:

Granulated Sugar: Change the amount, 3 lb. 8 oz., into all ounces first.

$$3 \text{ lbs} \times 16 = 48 \text{ oz} + 8 \text{ oz} = 56 \text{ oz}$$

Now multiply by the working factor: $56 \times 5 = 280 \text{ oz}$.

280 oz can be written in mixed units: **17 lb. 8 oz.**

Salt: $1 \frac{1}{2} \text{ oz.} \times 5 = 1.5 \text{ oz} \times 5 = \mathbf{7.5 \text{ oz.}}$ or **7 1/2 oz.**

Powder milk: $6 \text{ oz.} \times 5 = \mathbf{30 \text{ oz.}}$

Whole eggs: Change the mixed units 1 lb. 8 oz. to all ounces:

$$1 \text{ lb} \times 16 = 16 \text{ oz.} + 8 \text{ oz.} = 24 \text{ oz.}$$

Now multiply with your working factor: $24 \text{ oz.} \times 5 = 120 \text{ oz}$.

120 oz. can be written in mixed units too: **7 lb. 8 oz.**

Water: $2 \text{ lb.} \times 5 = \mathbf{10 \text{ lb.}}$

Hints for converting recipes:

1. Always find the *working factor* first
2. *Change any mixed units* (i.e., 3 lb. 5 oz., or 2 gal. 3 quarts) into *one* unit measure before multiplying by the working factor.
3. Any *decimal results* can be rounded to the nearest $1/4^{\text{th}}$, $1/8^{\text{th}}$, $1/16^{\text{th}}$, etc. depending upon the accuracy you want to achieve. (We used the nearest $1/8^{\text{th}}$ in the examples in the text)

Practice Problems

For each recipe (partial listing), convert to the indicated yield. Any decimal results should be rounded to one decimal place. For practice you may wish to convert any amounts that end in a decimal to fractional form. (Nearest 1/4th or 1/8th)

1. Potato Pancakes: yield 20. Change to a yield of 45

WORKING FACTOR: _____

INGREDIENT	AMT. IN ORIGINAL	AMT. FOR NEW YIELD
Peeled red potatoes	8 lb.	
Onions	10 oz.	
Whole eggs	8	
Flour	8 oz.	
Salt	1 oz.	
Parsley (chopped)	1/4 cup	

2. Soft Dinner Roll: Yield 5-dozen. Change to 4-dozen.

WORKING FACTOR: _____

INGREDIENT	AMT. IN ORIGINAL	AMT. FOR NEW YIELD
Granulated sugar	1 lb.	
Hydrogenated shortening	1 lb. 4 oz.	
Dry milk	8 oz.	
Salt	2 oz.	
Whole eggs	6	
Compressed yeast	6 oz.	
Cold water	4 lb.	
Bread flour	7 lb.	

3. A 24-pack of 0.5 L bottles of spring water costs \$4.98. Find the price/gallon.
4. Four hundred sixty-four 10 oz. Sizzler steaks are ordered at \$6.79 per pound. Find the total cost.

5. The following is a recipe for Lasagna (serves 90)

4 lb. lasagna noodles
15 lb. ground beef
3 c. chopped onion
½ tsp. Anise
1 tsp. Garlic powder
1 tsp. Pepper
2 tsp. Salt
3 T. crushed oregano
3 T. parsley flakes
2 cans Italian Spaghetti sauce (#10 cans)
15 eggs
10 lb. cottage cheese
1 ½ lb. Parmesan cheese, grated
10 lb. grated mozzarella cheese

- a. Find the total weight (in pounds) of this recipe. (Assume 1 cup = 8 oz., 12 large eggs = 24 oz., and #10 can = 7 lb 5 oz.) (Round to nearest tenth.)
- b. If this recipe is to be divided equally among six steam table pans, how many pounds will be put in each pan? (Round to nearest tenth.)

Applied Problems - Formulas

Using Production Formulas: Production formulas are common rules of thumb used for typical situations encountered in the kitchen. As you will see, most production formulas are simply ratios. Listed below are a few of the more common ones. (An example will follow each production formula.)

(1) Baked Rice: Use a ratio of 2 parts liquid to 1 part raw rice.

Suppose you use 4 lbs. of rice. How much water do you need?

Set up a proportion to solve.

Word ratio: liquid/rice

Set up your proportion using the given ratios: $2 / 1 = x / 4$ lbs

By using cross multiplication, the solution for x is **8 lbs. of water**

(2) For every 1 pound of coffee, use 2 1/2 gallons of water.

If you have 3/4 lb. of coffee, how much water is needed?

Word ratio: lbs. of coffee/gal. of water

Set up a proportion using the given ratio: $1 / 2.5 = .75 / x$

You will need $x = 1.875$ or **1 7/8 gal. of water.**

(3) To prepare stock using flavored soup bases, use 4 oz. of base for every gallon of water.

How much base is needed if you require 3 gal. of stock?

Word ratio: # oz. base/# gal. water

Set up a proportion to solve: $4 \text{ oz}/1 \text{ gal} = x / 3 \text{ gal}$

You will need $x = 12$ **oz. of base**

Some others...

(4) To prepare pan grease, thoroughly mix together 8 oz. of flour to every 1 lb. of shortening.

(5) To prepare a rich egg wash, mix together 4 whole eggs to every quart of milk.

(6) For pie dough, use 1 quart of liquid for every 4 lbs. of flour.

(7) A pint of liquid is a pound.

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1. Determine the amount of base needed to prepare the following amounts of stock.
 - a. 2 gallons stock
 - b. 1/2 gal. stock

8. One cup of flour equals 4.25 oz., if a recipe calls for $4\frac{1}{2}$ cup of flour, determine how many ounces are needed? (Express answer as a mixed number.)

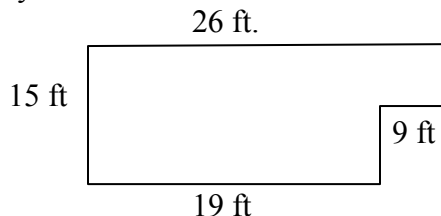
9. If 2 cups of icing are needed to frost the top of a 13" x 9" cake, how much icing will be needed to frost an 18" x 26". (Round to nearest $\frac{1}{2}$ cup.)

10. One pound of raw potatoes yields $1\frac{3}{4}$ c. mashed potatoes. Three 18-quart Nesco roasters filled with mashed potatoes are needed. How many pounds of raw potatoes should be used? (Round to nearest $\frac{1}{2}$ lb.)

11. One pound of granulated sugar yields $2\frac{1}{4}$ cups. Eleven quarts of sugar are called for in the 100-dozen sugar cookie recipe. How many pounds of sugar will be used to make the cookies? (Round to nearest tenth.)

Applied Problems – Geometry

1. The diagram below represents the dining area of a restaurant. The new owners want to remodel and put up a wallpaper border around the entire room. How many feet of border do they need to buy?



2. The manager and assistant manager at Pizza Shack are arguing about the pricing of the 6-inch diameter “single” pizza and the 12-inch diameter “small” pizza. The assistant manager says the “single” pizza is \$2.00 and the “small” is twice as big as the “single” so it should cost \$4.00. The manager tells the assistant that those calculations are wrong. What price should the assistant manager put on the “single” pizza? (Show your work.)
3. You are buying square tables for your diners that are 30 inches on a side. If you need to leave 18 inches of clearance on a side for a chair, how much floor space, in square feet, will you allow for each table? (Show your work.)
4. A recipe for fudge states that if you use a 9” x 13” pan the fudge will be 2” thick. You don’t have any 9” x 13” pans.
 - a. Will the mix fit in one 9” x 9” x 3” pan or will you have to use two?
 - b. How thick will the fudge be if you put it in two 9” x 9” pans?
5. Determine the “frostable” surface area, in square inches, of an 8” x 8” x 2” cake (four sides and the top.)

Applied Problems—Data

1. Using Microsoft Excel, make a circle graph showing the following frozen dessert data: Regular ice cream (80%), reduced-fat, light low-fat and nonfat ice cream (11%), sherbet (4.5%), frozen yogurt (4%) and sorbet (0.5%). Source: Information Resources, Inc. (IRI, 2001)

2. Using Microsoft Excel, make a bar graph showing the following data on money spent on deserts during one year ending March 11, 1997: Cookies--\$3.6 billion, ice cream--\$2.3 billion, frozen novelties--\$1.4 billion, frozen yogurt--\$631 million, doughnuts--\$431 million, ice milk/sherbet--\$328 million, pie--\$178 million, cheesecake--\$12 million. Source: IRI, 2001

Applied Problems—Statistics

1. The following is the number of pies sold per day during the last two weeks at Squeak's Bakery: 2, 3, 7, 10, 14, 20, 3, 7, 10, 10, 17, 18.
 - a. Find the mean. (Round to nearest tenth.)
 - b. Find the median. (Round to nearest tenth.)
 - c. Find the mode. (Round to nearest tenth.)

2. The following is the number of bowls of French onion soup sold per day: 25, 37, 19, 25, 39, 60, 41.
 - a. Find the mean. (Round to nearest tenth.)
 - b. Find the median. (Round to nearest tenth.)
 - c. Find the mode. (Round to nearest tenth.)

3. Listed below are the number of cookies frosted per hour by two workers at Cookie Monster's Bakery.
Worker 1: 150, 160, 172, 171, 175, 170, 163, 160
Worker 2: 112, 140, 149, 191, 172, 163, 138, 122
 - a. Find the range of each worker.
 - b. Find the mean of each worker. (Round to nearest tenth)
 - c. Find the standard deviation of each worker. (Round to nearest tenth.)
 - d. Which worker appears to be the better worker considering speed and consistency?

Applied Problems—Finance

1. Find the unit price for each of the following—round to nearest penny:
 - A. 26 oz. of Folgers Decaffeinated Coffee for \$5.38 \$ _____/oz
 - B. 39 oz of Folgers Classic Roast coffee for \$5.38 \$ _____/oz

2. Find the unit price for each and decide which option is cheaper—round to nearest penny:
 - A. 1 ½# tossed garden salad for \$3.74 \$ _____/oz
 - B. 6 oz. fresh Express Spring mix salad for \$2.75 \$ _____/oz
 - C. Better buy? A or B

3. An invoice for \$245.97 offers terms of 1.5/10, net/30. Find the cash discount if you pay within ten days. (Round to nearest penny.)

4. Complete this order—apply a 3% discount based on the subtotal.

Quantity	Description	Unit Price	Amount
7 lbs	Fresh tomatoes	\$1.39/lb	
20 lbs	Fresh strawberries	\$2.39/lb	
12 1/2 lbs	Colby Jack cheese	\$2.99/lb	
Subtotal			
Discounts			
Shipping			
Total			

Shipping: Standard shipping is \$4.00 for order, plus \$0.15 per pound

5. A carton containing 24 pasties costs \$35.75.
 - a. Find the cost per pasty—round to nearest penny.
 - b. If the restaurant manager lists the price of a pasty in the menu at \$3.50, find the mark up rate. (Round to nearest tenth.)

6. Find the selling price of a can of tuna that costs \$0.47 and the mark up rate is 15%. (Round to nearest penny.)

7. Find the selling price for a 16 oz. package of Nabisco Chips Ahoy! That costs \$2.49 and the mark up rate is 22%. (Round to nearest penny.)

8. Freshlike frozen corn costs \$0.95 and sells for \$1.09.
 - a. Find the mark up.

 - b. Find the mark up rate. (Round to nearest tenth.)

9. A half-gallon of Blue Bunny ice cream costs \$2.49 and sells for \$2.89.
 - a. Find the mark up.

 - b. Find the mark up rate. (Round to nearest tenth.)

10. Betty Cracker borrowed \$6,450 at $7\frac{1}{2}\%$ simple interest for 3 months. Find the interest on this loan. (Round to nearest penny.)

11. What is the total amount of Ben Doughboy's savings if he invested \$12,000 for 3 years at 6.7% interested compounded quarterly? (Round to nearest penny.)

12. How much money do you save by paying for a hamburger patty machine in cash?

Buying on time: \$50 down, \$18.50/month for 2 years

Cash price: \$405

For #13 & #14, use the loan table, p. 56, from Finance Unit.

13. Captain Crunch borrowed \$25,000 at 7.0% interest for 5 years.
 - a. Find the monthly payment.
 - b. Find the total amount paid.
 - c. Find the total amount of interest paid.

14. Count Chocula borrowed \$70,000 at 6% interest for 30 years.
 - a. Find the monthly payment.
 - b. Find the total amount paid.
 - c. Find the total amount of interest paid.

15. Raw food cost is \$2.98 and mark up rate is 75%. Find the selling price. (Round to the nearest penny.)

Applied Problems – Answer Key

Fractions

- 1.) $35 \frac{3}{4}$ hrs
- 2.) No. 10 scoop
- 3.) $8 \frac{1}{2}$ lbs
- 4.) Recipe 2 ($\frac{3}{5}$ tsp)
- 5.) $\frac{2}{5}$ tsp
- 6.) $\frac{3}{5}$, $\frac{3}{4}$, $\frac{5}{6}$, $\frac{7}{8}$
- 7.) \$9
- 8.) $6 \frac{2}{3}$ lbs
- 9.) 2 cups
- 10.) $11 \frac{1}{4}$ hrs
- 11.) 15 lbs
- 12.) 16 times
- 13.) 86 *complete* servings
- 14.) $6 \frac{11}{20}$ hrs
- 15.) $15 \frac{3}{8}$ lbs
- 16.) $\frac{1}{4}$ lb
- 17.) $5 \frac{13}{16}$ lb
- 18.) $22 \frac{1}{2}$ hrs
- 19.) a. $16 \frac{3}{8}$, b. $11 \frac{5}{8}$

Decimals

- 1.) a. 0.438 lbs, b. 0.4 lbs
- 2.) Choice B
- 3.) $\frac{5}{8}$ cup
- 4.) 0.045, 0.4, 0.405, 0.415, 0.45
- 5.) 0.3 lbs
- 6.) $2 \frac{7}{16}$ lbs
- 7.) 3.625 cups
- 8.) $\frac{4}{5}$ lb
- 9.) $\frac{7}{8}$ lb
- 10.) \$0.53
- 11.) \$106.44
- 12.) a. \$540, b. \$495.45
- 13.) 31 complete rolls
- 14.) \$3.73
- 15.) 15.25 lbs
- 16.) 6 lbs
- 17.) \$0.13 per salad
- 18.) around 68 or 69 a night
- 19.) 17 boxes
- 20.) a. 23.25 lbs, b. \$356.50

Percents

- 1.) 21.1%
- 2.) 34
- 3.) \$14.40
- 4.) \$2500
- 5.) \$8000
- 6.) 56.6%
- 7.) \$24.34
- 8.) 0.56 oz
- 9.) 24%
- 10.) 8 cans
- 11.) 29.4 lbs
- 12.) \$8125/month
- 13.) \$27.93
- 14.) 2.2 lb
- 15.) 80 lb
- 16.) 45.2%
- 17.) 81.6%
- 18.) 229 lb
- 19.) 9.8 lb
- 20.) \$17.50

Measurement

Calculating Recipe Cost

1.) Ingredient	Cost/Unit	Total Item Cost
Flour	\$0.25/lb	\$0.25
Eggs	\$0.049/ea	\$0.25
Olive Oil	\$0.0479/oz	\$0.02

Total \$0.52

2.) Ingredient	Cost/Unit	Total Item Cost
Yeast	\$0.11/oz	\$0.22
Bread Flour	\$0.25/lb	\$0.63
Salt	\$0.028/oz	\$0.03
Sugar	\$0.02/oz	\$0.03
NFDM	\$0.1556/oz	\$0.39
Shortening	\$0.04/oz	\$0.06

Total \$1.36

1.) Work Factor Ingr. Amt New Yield

2.25	Potatoes	18 lb
	Onions	22.5 oz
	Eggs	18
	Flour	18 oz
	Salt	2.25 oz
	Parsley	0.6 cups

2.) Work Factor Ingr. Amt New Yield

0.8	Sugar	0.8 lb
	Shortening	1 lb
	Milk	6.4 oz
	Salt	1.6 oz
	Eggs	5
	Yeast	4.8 oz
	Water	3.2 lb
	Flour	5.6 lb

3.) \$1.57/lb

4.) \$1,969.10

5.) a. 58.7 lb, b. 9.8 lb

Formulas

Using Production Formulas

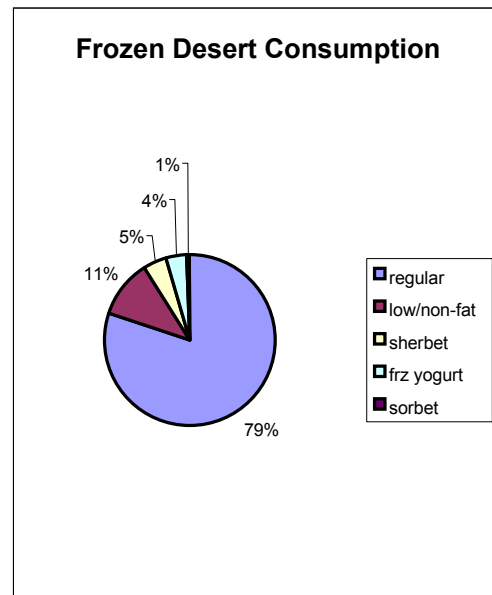
- 1.) (a) 8 oz (b) 2 oz
- 2.) (a) 6 pints (b) 3 gal
- 3.) (a) 7.5 gal (b) 12.5 gal
- 4.) (a) 12 lb (b) 24 lbs (c) 18 lbs
- 5.) (a) 2.5 qts (b) 4 qts
- 6.) 50 bars
- 7.) 19 loaves
- 8.) 19 1/8 c.
- 9.) 8 c.
- 10.) 123 1/2 lb
- 11.) 39.1 lb

Geometry

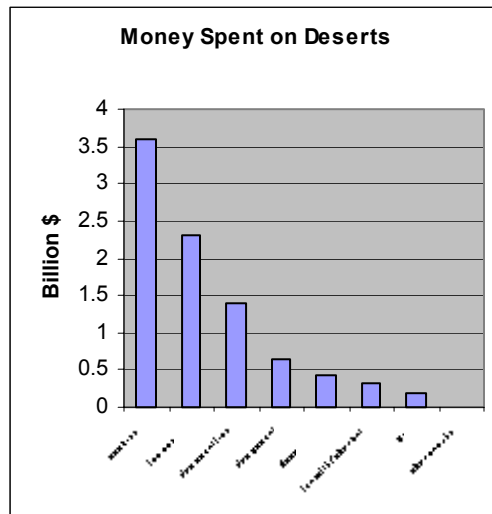
- 1.) 82 ft of wallpaper border
- 2.) Calculate the areas of the pizzas not diameter
 Single = 28.27 in² Small = 113.09 in²
 The Small is 4 times bigger than the Single so it should be \$8.00
- 3.) 30.25 square feet
- 4.) a. Yes b. 1.44 in or 1 4/9 in
- 5.) 128 sq. in.

Data

1.)



2.)



Statistics

- 1.) a. 10.1, b. 10, c. 10
- 2.) a. 35.1, b. 37, c. 25
- 3.) a. W1: 25, W2: 70
 b. W1: 165.1, W2: 148.4
 c. W1: 8.4, W2: 26
 d. W1

Finance

- 1.) a. \$.21/oz, b. \$.14/oz
- 2.) a. \$.16/oz, b. \$.46/oz c. A
- 3.) \$3.69
- 4.) \$9.73, \$47.80, \$37.38, \$94.91,
(\$2.85), \$9.93, \$101.99
- 5.) a. \$1.49 b. 134.9%
- 6.) \$.54
- 7.) \$3.04
- 8.) a. \$.14, b. 14.7%
- 9.) a. \$.40, b. 16.1%
- 10.) \$120.94
- 11.) \$14,647.09
- 12.) \$89.00
- 13.) a. \$495 b. \$29,700 c. \$4,700
- 14.) a. \$420 b. \$151,200 c. \$81,200
- 15.) \$5.22

Applied Problems – Quiz

Fractions

1. A recipe calls for 4 cups of white flour and 3 cups of whole wheat. What fraction of the flour is whole wheat?
2. A dressing recipe has 9 ounces of oil—3 ounces of sunflower and the rest olive oil. What fraction of the oil is olive oil?
3. A corn bread recipe calls for $\frac{2}{3}$ cup of white flour. If you make a triple batch, how much white flour is needed?
4. A bread recipe requires $5\frac{3}{4}$ cups of white flour. If a half recipe is made, how much white flour will be needed?
5. A bread recipe specifies $3\frac{3}{4}$ cups of white flour, $2\frac{1}{3}$ cup whole-wheat flour, and $1\frac{3}{8}$ cup rye flour. What is the total amount of flour in the recipe?
6. A soup recipe calls for a total of 6 cups of vegetables. If $3\frac{1}{2}$ cups are potatoes, $1\frac{3}{4}$ cups carrots, and the rest chopped red cabbage, how much cabbage is in the soup?
7. A recipe has 3 times as much white sugar as brown. If $1\frac{1}{4}$ cup brown sugar is used, how much white sugar does the recipe require?

Decimals

1. An automated machine requires you to type in ingredients as decimal values, not fractions. What decimal number corresponds to $\frac{7}{8}$?
2. Often ingredient prices are given to three decimal places per ounce. Which is a better deal, bulk cinnamon at \$0.335 per ounce, or \$0.330 per ounce?
3. A metric recipe requires 0.65 liters of milk. What fraction of a liter is this? (Reduce if possible.)
4. Toby makes \$8.57 per hour at Chez Maurice. Abby makes \$9.12 per hour at Harbor Crest Restaurant. What will the difference in their gross pay be for a 40-hour week?
5. Ray Dixon works at Rhodees' and gets a \$0.25 per hour bonus after 8 p.m. What will his bonus be in a week that he works 8.5 hours after 8 p.m.? (Round to the nearest cent.)
6. After working 40 hours in one week Sandy gets 1.5 times her regular pay. If she makes \$7.55 per hour, what is her hourly pay rate for the hours over 40 in a week?
7. Total up the cost of ingredients for the following soup: 3 heads of cauliflower at \$1.27 each, 5 bunches of chives at 17 cents per bunch, 2 pounds of meat at 3 for \$5.00, and one gallon of stock worth \$1.17 (round your answer to the nearest cent).

Percents

1. One eighth of the entrees at Ravens Roost are vegetarian. What percent is this?
2. Of the employees at Jimmys' Harborside, 45% are part time. Express this as a reduced fraction.
3. At Bramblewood Ale House cooks get $\frac{12}{85}$ of the total tips for the evening. What percent is this? (Round to nearest tenth.)
4. Gross receipts at GiGi's were \$5,867 last Friday. Tuesday's receipts were 19% of Friday's. What were Tuesday's gross receipts?
5. Out of a total monthly sales of \$157,000 at The Hilltop, \$47,800 came from banquets and parties. What percent of the monthly business is this? (Round to nearest tenth.)
6. Since the new manager took over, profits at Harvey's has increased from \$63,000 last year to \$83,500 this year. What is the percent increase? (Round to nearest tenth.)
7. Labor costs in the kitchen at House of Kwan have gone from \$12,656 per month to \$11,867. What is the percent decrease? (Round to nearest tenth.)
8. 65% of a fresh salmon's total weight is edible after the fish has been skinned and boned. If a salmon weighs 15.75 pounds, how much fish will be left after cleaning? (Round to nearest tenth.)

9. 87% of headless shrimp's total weight yields peeled meat. If 20 pounds of peeled shrimp is needed, how many total pounds of headless shrimp is needed? (Round to nearest tenth.)

10. From 25 pounds of fresh bananas, 17.5 pounds of edible fruit was removed from the peelings. Find the edible fruit rate from the bananas.

11. From 30 pounds of whole apples, 22.5 pounds of edible fruit was left after peeling and coring the apples. Find the edible rate yield for the apples.

12. 75% of lettuce's total weight yields useable lettuce. If 125 pounds of lettuce are needed for a banquet, find how many total pounds of total fresh must be purchased. (Round to nearest tens.)

13. 18.5 pounds of whole cauliflower yield 55% edible vegetables. Find the yield of cauliflower after cleaning and preparing it for use? (Round to nearest tenth.)

14. Determine the price of a meal where a tip of \$4.30 was 15% of the price of the meal. (Round to the nearest penny.)

Measurement

1. A recipe calls specifies 2 pints of soup stock. How many cups is this?

2. Sherry is needed for a recipe. How many ounces will 2 cups provide?

3. A peach cobbler recipe calls for 2 pecks of peaches. How many quarts is this?

4. A metric recipe calls for 475 ml of white wine. About how many cups is this? (Round to nearest whole number.)

5. How many grams are there in half a pound of butter?

6. An 8" x 8" cake pan has 64 square inches. How many square centimeters is this? (Round to nearest tenth.)

7. A recipe requires 5 tablespoons of water. How many milliliters is this? (Round to nearest tenth.)

8. A 6 pack of 0.5 L bottles of 7-Up costs \$2.22. Find the price/gallon. (Round to the nearest penny.)

9. White Cream Icing: Yield 5 cakes. Change yield to 3 cakes.

WORKING FACTOR: _____

INGREDIENTS	AMT. IN ORIGINAL	AMT. FOR NEW YIELD
Emulsified shortening	1 lb. 4 oz.	
Salt	$\frac{1}{4}$ oz.	
Dry milk	5 oz.	
Water	14 oz.	
Powdered sugar	5 lb.	

10. Fill in the Cost per Unit and the Total Item Cost columns, then determine the Total Recipe Cost.

Recipe Name: <i>Chicken Salad on Pita-type Bread</i>				
Portions: 25		Portion Size: 3 1/2 oz + Pita Bread		
Ingredient	Amount	Cost	Cost per Unit	Total Item Cost
Chicken Breast	2 lb	\$4.70/2 lb		
Frozen Chicken	1 lb	\$2.98/lb		
Mayonnaise	1 pt	\$4.13/40 oz		
Celery	1.5 lb	\$0.53/lb		
Lemons	2	\$1.09/6		
Lettuce, Red Leaf	½ head	\$0.69/head		
Almonds	1.5 oz	\$1.49/4 oz		
Pitas	25	\$0.13/pita		

TOTAL RECIPE COST \$ _____

11. 1200--6 oz. hamburger steaks are ordered at \$2.59 per pound. Find the total cost.

12. The following is a recipe called Mega Meatloaf for 1000.

- 350 lb ground beef
- 10 lb chopped green onions
- 10 lb ground celery
- 3 dozen eggs
- 5 lb chopped green peppers
- 4 (No. 10) cans (12 qt.) tomato puree
- 15 lb bread crumbs
- 3 c. salt
- 6 oz. pepper
- ½ c. Worcestershire sauce

- a. Find the total weight (in pounds) of this recipe. (Assume 1 c. = 8 oz. and 12 large eggs = 24 oz.) (Round to nearest tenth.)
- b. If this recipe is to be divided equally among 70 loaf pans, how many pounds will be put in each pan? (Round to nearest penny.)

Formulas

1. Alfredo purchased a new oven manufactured in Switzerland. All the temperature settings are in degrees Celsius. Given this formula: $C = 5/9(F - 32)$, what Celsius temperature is equivalent to 375 degrees Fahrenheit? (Round to nearest tenth.)
2. Within a range of 300 degrees to 425 degrees, cooking time is inversely proportional to oven temperature. If a roast cooks in 180 minutes at 325 degrees, how long will it take at 375 degrees?
3. The following butter cream icing recipe makes enough frosting for one 9" four layer cake—2 c. shortening, 1 stick butter, $\frac{1}{2}$ c. heavy cream, 2 tsp. vanilla, and 2# (8c.) powder sugar. How much of each ingredient is need if you only need $\frac{1}{4}$ of the recipe to frost a dozen cupcakes?
4. Converting bread recipes to be used in bread machines require the flour to be decreased by $\frac{1}{3}$. If a regular bread recipe calls for $4\frac{1}{2}$ c. flour, how much flour should be used to make the same bread in a bread machine?
5. How many 1" x 3" slices of cake can be cut from a 9" x 13" pan?
6. Three $1\frac{1}{2}$ # loaves of bread can be cut into 36 slices. How many $1\frac{1}{2}$ # loaves will it take if 250 slices are needed? (Round to nearest whole number.)
7. My white cake recipe for a wedding cake makes 12 cups of batter. I need to make 16 cups for the pans I'm using. How many times the original recipe should I make?

8. To frost the top of an 8" x 8" cake, $\frac{3}{4}$ cup of icing is needed. How much icing will be needed to frost an 18" x 26"? (Round to nearest $\frac{1}{2}$ cup.)

9. One pound of carrots, peeled equals $3\frac{1}{2}$ cups diced carrots. Two 18-quart Nesco roasters filled with diced carrots are needed. How many pounds of peeled carrots should be used? (Round to nearest tenth.)

10. A dozen medium sized eggs equal 21 ounces. If 144 ounces of eggs are needed to make 100-dozen sugar cookies, how many medium sized eggs will be used to make the cookies? (Round to next larger whole number.)

11. One pound of all-purpose flour equals $3\frac{1}{2}$ cups. 24 quarts of flour are called for in the 100-dozen sugar cookie recipe. How many pounds of flour will be used to make the cookies? (Round to nearest tenth.)

12. If one pound of ground coffee makes two gallons of brewed coffee, how many pounds of ground coffee should be used in a 100-cup coffee pot? (Express answer as a mixed number.)

Geometry

1. What cake has more area, a round cake 12 inches in diameter, or a 9" x 12" rectangular cake?

2. How many inches of icing will be needed to put a border on the outside edge of a round cake 15 inches in diameter? (Round to nearest tenth.)

3. How many inches of icing will be needed to put a border on the outside edge of a 9" x 12" rectangular cake?
4. Alice's Restaurant is building a new baking room. The dimensions of the room are 8' x 10'. If they put 3 tables, each 3' x 7' in the room, how many square feet will there be left in the room?
5. One guideline says you need 20 square feet of kitchen space for every 200 square feet of seating area. If the seating area at Ron's Restaurant is 80' x 55', how much kitchen space does this rule of thumb require?
6. Determine the "frostable" surface area of a 9" x 13" x 2" cake (four sides and the top.)

Data

1. Using Microsoft Excel, make a bar graph showing what Americans bake at home out total made: Cookies—84%, cakes—77%, brownies—64%, muffins—59%, pies—58%, breads—52%, specialty desserts—52%. Source: Better Homes & Garden Consumer Panel, 2001.
2. Using Microsoft Excel, make a bar graph showing the top ice cream producing States: California—193.1 million gal, Indiana—100.6 million gal, Pennsylvania—70.9 million gal, Texas—60.3 million gal, New York—53.7 million gal, Minnesota—million 44.1 gal. Source: USDA, 2000.
3. Based on supermarket sales of ice cream through February 2003, the top five individual flavors in terms of share of segment in the United States are: vanilla (33%), chocolate flavors (19%), nut/caramel flavors (7%), neapolitan (5%), and strawberry (4%). Source: The NPD Group's National Eating Trends Services/USA Today. Using Microsoft Excel, make a circle graph for this data.

Statistics

1. The following is the number of maple frosted long john donuts sold per day during the last two weeks at the Shop for Dough: 59, 70, 90, 88, 110, 143, 70, 69, 88, 95, 115, 151.
 - a. Find the mean. (Round to nearest tenth.)
 - b. Find the median. (Round to nearest tenth.)
 - c. Find the mode. (Round to nearest tenth.)

2. The following is the number of vanilla flavored ice cream cones sold per day at the Cone Hut: 69, 68, 70, 93, 95, 109, 155.
 - a. Find the mean. (Round to nearest tenth.)
 - b. Find the median. (Round to nearest tenth.)
 - c. Find the mode. (Round to nearest tenth.)

3. Listed below are the number of cakes frosted per hour by two workers at Cookie Monster's Bakery.
Worker 1: 12, 12, 13, 12, 13, 14, 12, 12
Worker 2: 5, 7, 12, 18, 17, 19, 9, 9
 - a. Find the range of each worker.
 - b. Find the mean of each worker. (Round to nearest tenth.)
 - c. Find the standard deviation of each worker. (Round to nearest tenth.)
 - d. Which worker appears to be the better worker considering speed and consistency?

Finance

1. Find the unit price for each of the following, rounding to nearest penny:
 - A. 17.6 lb of Alpo Prime Cuts Dry Dog Food for \$5.48 \$ _____/lb
 - B. 20 lb of Iams Dry Dog Food for \$13.98 \$ _____/lb

2. Find the unit price for each of the following, rounding to nearest penny:
 - A. 3.15 lb. of Friskies Special Diet Dry Cat Food for \$2.78 \$ _____/lb
 - B. 4 lb. of Iams Dry Cat Food for \$6.88 \$ _____/lb

3. Find the unit price for each choice and decide which option is cheaper, rounding to nearest penny.

A. 15 oz. of Broccoli/cauliflower soup for \$2.69 \$_____/oz

B. 31 oz. of broccoli/cauliflower soup for \$3.99 \$_____/oz

C. Better buy? A or B

4. Find the unit price for each choice and decide which option is cheaper, rounding to nearest penny.

A. 2 L of Springtime soda for \$0.69 \$_____/L

B. 6 pack of 0.5 L bottles of Springtime soda at 4/\$8.88 \$_____/L

C. Better buy? A or B

5. An invoice for \$326.43 offers terms of 1.5/10, net/30. Find the cash discount if you pay within ten days.

6. Complete this order—apply a 3% discount based on the subtotal.

Quantity	Description	Unit Price	Amount
11 lbs	Fresh asparagus	\$1.99/lb	
8 lbs	Muenster cheese	\$3.39/lb	
25 lbs	Tuna Salad	\$3.49/8 oz	
Subtotal			
Discounts			
Shipping			
Total			

Shipping: Standard shipping is \$4.00 for order, plus \$0.15 per pound

7. Find the selling price for a 5# bag of potatoes that costs \$0.72 and the mark up rate is 15%. (Round to nearest penny.)

8. Find the selling price for a 15 oz. Jack's Pepperoni Pizza that costs \$2.00 and the mark up rate is 18%. (Round to nearest penny.)
9. Brazilian lobster tails cost \$13.06/lb and sell for \$16.98/lb.
- Find the mark up.
 - Find the mark up rate. (Round to nearest tenth.)
10. A box of Banquet Homestyle Bakes costs \$3.03 and sells for \$3.99.
- Find the mark up.
 - Find the mark up rate. (Round to nearest tenth.)
11. Patsy Toasties borrowed \$3,275 at 8% simple interest for 4 months. Find the interest of this loan. (Round to nearest penny.)
12. Doyle Banana invested \$500 at 3.2% interest compounded quarterly. Find out how much money is in the account after 15 years. (Round to nearest penny.)
13. How much money do you save by paying for a 23 cu. ft. refrigerator in cash?
Buying on time: \$200 down, \$65/month for 2 yrs
Cash price: \$1499.99
14. Pebbles Fruiti borrowed \$40,000 at 6.5% interest for 15 years.
- Find monthly payment.
 - Find total amount paid.
 - Find total amount of interest paid.

15. Tony Tiger borrowed \$12,000 at 7.5% for 4 years.
- Find monthly payment.
 - Find total amount paid.
 - Find total amount of interest paid.
16. Raw food cost is \$4.30 and mark up rate is 35%. Find the selling price. (Round to nearest penny.)
17. A carton containing 40—40 oz. hamburger patties and buns costs \$63.20.
- Find the cost per patty.
 - If the manager lists the price of a hamburger at \$2.00, find the mark up rate. (Round to nearest tenth.)