The Working Factor

It is not unusual for a chef or baker to have to convert a recipe for a given number of servings to a larger or smaller number of servings. Using a working factor quickly changes a recipe to fit the desired situation. The working factor is found by dividing the desired yield by the yield of a recipe. The yield of a recipe is the number of servings, portions or units produced by that recipe. The working factor is always used in fraction form.

\[
\text{working factor} = \frac{\text{new yield}}{\text{old yield}}
\]

To adjust the recipe to the desired yield, you multiply the amount of each ingredient by the working factor.

Example 1: (The recipe yield is provided.)

This recipe for Cider Sauce, taken from *The Professional Chef’s Techniques of Healthy Cooking*, page 185, yields 2 quarts. Suppose you needed 3 quarts. The working factor = 3/2 so you need to multiple each ingredient by 3/2. The second column is what you would need to use in the adjusted recipe.

<table>
<thead>
<tr>
<th>Cider Sauce</th>
<th>yield = 3 quarts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Original recipe</strong></td>
<td><strong>Adjusted recipe</strong></td>
</tr>
<tr>
<td>1 fluid ounces</td>
<td>3/2 * 1 = 3/2 fluid ounces</td>
</tr>
<tr>
<td>Cider vinegar</td>
<td>3/2 * 2 = 3 quarts</td>
</tr>
<tr>
<td>2 quarts</td>
<td>3/2 * 1 = 3/2 quart</td>
</tr>
<tr>
<td>Apple cider, fresh, unfiltered</td>
<td>3/2 * ¼ = 3/8 teaspoon</td>
</tr>
<tr>
<td>1 quart</td>
<td>3/2 * 1 = 3/2 quart</td>
</tr>
<tr>
<td>Fond de veau lie’</td>
<td>3/2 * ¼ = 3/8 teaspoon</td>
</tr>
<tr>
<td>¼ teaspoon</td>
<td>3/2 * ½ = 6 ¾ pounds</td>
</tr>
<tr>
<td>Salt</td>
<td>3/2 * ½ = 6 ¾ pounds</td>
</tr>
<tr>
<td>¼ teaspoon</td>
<td>3/2 * ¼ = 3/8 teaspoon</td>
</tr>
<tr>
<td>Black pepper, freshly ground</td>
<td>3/2 * ½ = 6 ¾ pounds</td>
</tr>
<tr>
<td>4 ½ pounds</td>
<td>Granny Smith apples, peeled, diced</td>
</tr>
</tbody>
</table>

(Note: Changing a recipe too much may cause some problems depending upon the particular ingredients. Some seasons, for example, may need to be adjusted higher or lower. In your C.A. classes, you will learn what ingredients are sensitive to change and how to adjust for this.)

Sometimes the recipe does not give a yield or the portion size is too small or too large. You will then need to determine the approximate yield for the recipe. If the recipe does not provide a yield, then you will need to prepare an amount and choose a reasonable serving (portion) size. The recipe yield is the weight or measure of the preparation divided by the weight or measure of one portion or serving. An important note is that the units must always be the same for the preparation and the portion.

\[
\text{recipe yield} = \frac{\text{weight/measure of preparation}}{\text{weight/measure of portion}}
\]

Example 2: (The recipe yield is not provided.)
Suppose a particular cookie recipe does not provide the yield. You choose to make and bake the cookies, using a satisfactory cookie size. If the recipe produces 70 cookies and one serving consists of two cookies, then you can find the yield.

\[
\text{recipe yield} = \frac{\text{measure of preparation}}{\text{measure of portion}} = \frac{70}{2} = 35
\]

The cookie recipe yields 35 servings or portions of two cookies each.

Example 3: (The recipe portion is too small.)
Suppose a recipe for Spiced Apples with Ginger Cream (from Fundamentals of Quantity Food Preparation: Desserts & Beverages, page 252) yields 48 servings of 1/3-cup portions. However, you feel this portion size is too small and you want to serve ½-cup portions instead. How many servings will the recipe yield?

\[
\text{recipe yield} = \frac{\text{measure of preparation}}{\text{measure of portion}} = \frac{1/3 \times 48}{1/2} = 16 = 32
\]

The recipe yield is 32 servings or portions of 1/3 cup each.

Example 4: (The recipe portion is too large.)
Recall a recipe for Spiced Apples with Ginger Cream yields 48 servings of 1/3-cup portions. However, you want to use only ¼ cup of the Spiced Apples with Ginger Cream since you are serving it in a basket of cake and ice cream.

\[
\text{recipe yield} = \frac{\text{measure of preparation}}{\text{measure of portion}} = \frac{1/3 \times 48}{1/4} = 16 = 64
\]

The recipe will yield 64 servings of ¼ cup each.

Additional directions/comments: In the CA business, you probably use decimal values for the altered recipes. However, this is a worksheet for practicing fractions, so you are expected to leave all answers in fraction form. Be sure the fractions are reduced. (Many calculators will automatically reduce the fractions for you.)

Homework Problems

1. A recipe for Turkey Broth with Mushrooms and Sage Tortellini (from the The Professional Chef’s Techniques of Healthy Cooking, page 273) has a yield of 10 portions. You are catering a party of 28 and this is the chosen soup. What is your working factor?

2. The Gray Crane Restaurant expects a party of 33. The meal includes Saffron Potatoes, but the recipe only serves 10. What is the working factor?

3. A recipe yields 15 dozen rolls, but you only need 8 dozen rolls. What is your working factor?

4. Here is a recipe for Blueberry Sauce for Blueberry Upside Down Cake (from Fundamentals of Quantity Food Preparation: Desserts & Beverages, page 92) with a yield of 30. Convert the recipe to yield 55 portions.

   Blueberry Sauce for Blueberry Upside Down Cake

   yield = 30
Blueberries, fresh, washed and well drained  4 cups
Water, hot, 2 ½ cups
Sugar  2 cups
Cornstarch 11 teaspoons
Water, cold 5 tablespoons
Lemon Juice 1 tablespoon
Salt 1/8 teaspoon

5. This recipe for Floating Island Soft Custard (Eggs and Flour) is taken from Fundamentals of Quantity Food Preparation: Desserts & Beverages, page 226. Convert the recipe to yield 11 portions.

Floating Island Soft Custard (Eggs and Flour)
yield = 18

Milk, hot  6 cups
Sugar  4 ounces
Salt ½ teaspoons
Flour, all-purpose 3 ½ tablespoons
Milk, cold 2 cups
Egg yokes 1 cup
Sugar 4 ounces
Vanilla 2 teaspoons

6. This recipe for Sour Cream Sauce is taken from Fundamentals of Quantity Food Preparation: Desserts & Beverages, page 205. Convert the recipe to yield 10 portions.

Sour Cream Sauce
yield = 30

Sour Cream 4 cups
Sugar, brown, soft 3 cups
Cinnamon ½ teaspoon

7. Find the recipe yield for this No Bake Cookie recipe from Fundamentals of Quantity Food Preparation: Desserts & Beverages, page129. Each cookie contains 1 1/8 ounces of dough.

No Bake Cookies
Sugar 18 ounces
Butter or margarine 8 ounces
Cocoa ½ ounces
Milk 8 ounces
Rolled wheat or oatmeal 20 ounces
Peanut butter 8 ounces
Nuts, chopped, optional 4 ounces
8. Suppose you are using the Cookie recipe from problem #7, but you need 96 cookies. What is your working factor?

9. The Cream Puff recipe from Fundamentals of Quantity Food Preparation: Desserts & Beverages, page 235, calls for 1 ½ ounce mixture for each cream puff. What is the yield?

Cream Puff or Éclair Formula

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water, hot</td>
<td>40 ounces</td>
</tr>
<tr>
<td>Butter or margarine</td>
<td>22 ounces</td>
</tr>
<tr>
<td>Flour, cake</td>
<td>22 ounces</td>
</tr>
<tr>
<td>Salt (½ teaspoon)</td>
<td>1/10 ounce</td>
</tr>
<tr>
<td>Eggs, whole, Grade B, medium</td>
<td>28 ounces</td>
</tr>
</tbody>
</table>

10. Suppose you are using the Cream Puff recipe from problem #9 but you need 118 cream puffs. What is your working factor?