

Chapter

5

Recipe Conversions

In this chapter, you will learn the following to World Class standards:

- Determining the Recipe Conversion Factor
- Decreasing Recipes
- Increasing Recipes
- Solve Real Kitchen Exercises

Lesson 5-1:

Determining the Recipe Conversion Factor

Early in our culinary career, the executive chef of our kitchen will want us to be able to resize a recipe for the number of servings. Sometimes the recipe will decrease in size to one or two servings where a personal chef is preparing for a small number of people. For a caterer, the directing chef will ask us to increase the recipe to accommodate a large party such as 240 people celebrating a wedding. Whether we are increasing or decreasing the quantities in the recipe, we must know what the original serving size was. So just after learning our kitchen measurements, we need to know how to factor those amounts without making any errors.

When we train in the kitchen, the first recipe conversion is most likely decreasing the servings to one. The first recipe we will convert together is for Roasted Red Pepper / Fire Roasted Tomatoes Soup.

Roasted Red Pepper / Fire Roasted Tomatoes Soup¹ – makes 20 – 1 cup servings

2 tbsp	Olive oil
1	Lg. red onion, diced
8-10	Roasted red peppers (6 ½ c)
6	Garlic cloves
1 c	Dry white wine
10	Fire roasted tomatoes, chopped (4 ¼ c)
8 c	Chicken broth
2 tsp	Worcestershire sauce
2 tsp	Cayenne pepper
1 tbsp	Balsamic vinegar

Now, let us compute the recipe for two servings. The first step is to create a recipe conversion factor, which is a fraction that has the numerator as the new recipe amount over the denominator that signifies the original recipe amount. Sometimes these numbers are the number of servings and other times they are a quantity of the recipe such as 20 cups.

$$\text{Recipe Conversion Factor} = \frac{\text{New Recipe Amount}}{\text{Original Recipe Amount}}$$

The recipe conversion factor is 0.1 as shown in the next formula.

¹ Roasted Red Pepper / Fire Roasted Tomatoes Soup recipe by Ron Olzak, Chef Apprentice at the Columbus Culinary Institute

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$$\text{RCF} = \frac{2\text{c}}{20\text{c}} = 0.1$$

The next step is to multiply each of the original amounts by the recipe conversion factor of 0.1. For example, the olive oil shown in the table computes to 0.6 teaspoon. In the kitchen, we want to round the amount to a measurement that we can easily use. The closest we can effortlessly come to 0.6 teaspoon is ½ tsp. By continuing with each item, we can use the techniques we learned in the first three chapters to develop a new recipe for the new amount.

Ingredient	Org. Amt.	Calculation	New Amount
Olive oil	2 tbsp	$2\text{T} \times 0.1 = \frac{0.2\text{T}}{1} \times \frac{3\text{t}}{1\text{T}} = 0.6 \text{ tsp}$	½ tsp
Lg. red onion	1	$1 \text{ onion} \times 0.1 = 0.1 \text{ onion}$	1/10 onion
Roasted red peppers	9	$9 \text{ peppers} \times 0.1 = 0.9 \text{ peppers}$	1 pepper
Garlic cloves	6	$6 \text{ cloves} \times 0.1 = 0.6 \text{ cloves}$	½ clove
Dry white wine	1 c	$1\text{c} \times 0.1 = \frac{0.1\text{c}}{1} \times \frac{16 \text{ tbsp}}{1\text{c}} \times \frac{3 \text{ tsp}}{1\text{tbsp}} = 4.8 \text{ tsp}$	5 tsp
Fire roasted tomatoes	10	$10 \text{ tomatoes} \times 0.1 = 1 \text{ tomato}$	1 tomato
Chicken broth	8 c	$8\text{c} \times 0.1 = \frac{0.8\text{c}}{1} \times \frac{8 \text{ fl.oz.}}{1\text{c}} = 6.4 \text{ fl.oz.}$	6.5 fl. oz.
Worcestershire sauce	2 tsp	$2\text{t} \times 0.1 = 0.2 \text{ tsp}$	¼ tsp
Cayenne pepper	2 tsp	$2\text{t} \times 0.1 = 0.2 \text{ tsp}$	¼ tsp
Balsamic vinegar	1 tbsp	$1\text{T} \times 0.1 = \frac{0.1\text{T}}{1} \times \frac{3\text{t}}{1\text{T}} = 0.3 \text{ tsp}$	¼ tsp

When we reduce a recipe, we want to make the converted list of ingredients accurate; however we also want to make the new amounts easy to measure with existing kitchen tools. Recipe lessening is more challenging in this respect than increasing a recipe; since we reach a point in the standard measuring tools where there not a common spoon to assist us. This is where the pinch and the smidgen spoons now are helpful.

Dash – 1/8 of a teaspoon

Pinch – 1/16 of a teaspoon

Smidgen – 1/32 of a teaspoon



Dash, Pinch and Smidgen

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In some cases, we will use mixed units to solve the problem. A dash is $\frac{1}{8}$ or 0.125 of a teaspoon. A pinch is $\frac{1}{16}$ or 0.0625 of a teaspoon. A smidgen is $\frac{1}{32}$ or 0.03125 of a teaspoon. Presently, we have $\frac{1}{4}$ or 0.25 tsp of balsamic vinegar and we want 0.3 teaspoons. Using the mix units, we can create the 0.3 by adding the $\frac{1}{4}$ (0.25) and the $\frac{1}{16}$ (0.0625) which is 0.3125. This is a much closer than just the previous measurement.

$$\text{Balsamic vinegar } 1 \text{ tbsp} \quad 1\text{T} \times 0.1 = \frac{0.1\text{T}}{1} \times \frac{3\text{t}}{1\text{T}} = 0.3 \text{ tsp} \quad \frac{1}{4} \text{ tsp} + 1 \text{ pinch}$$

When we are in a kitchen and working on our recipe, we should ask the executive chef who is training us whether our conversion is accurate enough. Whether measuring with a set of small spoons or using our finger and thumb to estimate the amount, small recipes do require a talent of adding diminutive amounts to gain the required total.

Practice Problems

Chef Bennett wants us to convert the recipe from a yield of 65 Crostinis to a count of 20.

For Portabellas:

20 ea. Portabella Mushrooms

1 $\frac{1}{2}$ Cups Balsamic Vinaigrette

Feta Cheese Spread:

3 - 5.2oz.
Wheels Boursin Cheese

$\frac{3}{4}$ cup Feta Cheese

$\frac{1}{4}$ cup Heavy Cream

Red Pepper/Onion Marmalade:

1 ea. Red Pepper

1 ea. White Onion

1 $\frac{1}{2}$ Cups Rice Wine Vinegar

1 $\frac{1}{2}$ Cups Sugar

Lesson 5-2

Increasing Recipes

Chef Bennet now wants us to increase the recipe for a larger benefit by making one gallon of the Roasted Garlic and Pine Nut Butter. The recipe that yields 2 ½ quarts is shown below. We will use the same Recipe Conversion Factor formula, but instead of placing the amount of servings into the fraction, we will write the new recipe yield (1 gallon) in the numerator and the original recipe amount of 2 ½ quarts in the denominator.



Roasted Garlic and Pine Nut Butter

Yield: 2 ½ quarts

Ingredients:

3 lbs.	Butter (softened)
1 ¼ cup	Roasted Garlic
2 cups	Pine Nuts (toasted)
2 tsp	Salt
2 tsp	White Pepper

Method:

Mix butter in a robot coupe until smooth. Add garlic, nuts, salt, and pepper. Serve at room temperature.

To Roast Garlic:

Place garlic in a baking pan and cover with olive or salad oil. Cover tightly with aluminum foil. Roast at 375 degrees for 35-45 minutes until golden brown. Strain from the oil when cool and puree. You can save the flavored oil for dressings, dipping, or sautéing.

$$\text{Recipe Conversion Factor} = \frac{\text{New Recipe Amount}}{\text{Original Recipe Amount}}$$

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$$\text{RCF} = \frac{1 \text{ gal}}{2 \frac{1}{2} \text{ qt}}$$

As we can see in the recipe conversion formula, we cannot divide with gallons in the numerator and quarts in the denominator, so we will change the 1 gallon to 4 quarts and then divide to get a recipe conversion factor of 1.6.

$$\text{RCF} = \frac{1 \text{ gal}}{2 \frac{1}{2} \text{ qt}} = \frac{4 \text{ qt}}{2 \frac{1}{2} \text{ qt}} = 1.6$$

The next step is to multiply each of the original amounts by the recipe conversion factor of 1.6. For example, the butter shown in the table computes to 4.8 lbs. By continuing with each item, we can use the techniques we learned in the first three chapters to develop a new recipe for the new amount.

Ingredient	Org. Amt.	Calculation	New Amount
Butter	3 lbs	$3 \text{ lbs} \times 1.6 = 4.8 \text{ lbs}$	4.8 lbs
Roasted Garlic	1 ¼ cup	$1 \frac{1}{4} \text{ c} \times 1.6 = 2 \text{ c}$	2 c
Pine Nuts (toasted)	2 cups	$2 \text{ c} \times 1.6 = 3.2 \text{ c}$ $\frac{0.2 \text{ c}}{1} \times \frac{48 \text{ tsp}}{1 \text{ c}} = 9.6 \text{ tsp}$	3 c + 3 Tbsp + ½ tsp
Salt	2 tsp	$2 \text{ tsp} \times 1.6 = 3.2 \text{ tsp}$	1 Tbsp + ¼ tsp
White Pepper	2 tsp	$2 \text{ tsp} \times 1.6 = 3.2 \text{ tsp}$	1 Tbsp + ¼ tsp

When we get answers like 3.2 cups, we could make the recipe 3 ¼ cups, however if Chef Bennett wants the recipe exact, we would convert the 0.2 cups to 9.6 teaspoons. Nine teaspoons equals three tablespoons with 0.6 teaspoons left over. We will make this a half of a teaspoon to make the toasted pine nuts 3 cups + 3 tablespoons + ½ teaspoon.

Practice Problems

Chef Bennett wants us to convert the recipe for RonJohn's Meatloaf² from the original 8 servings to 20 servings.

RonJohn's Meatloaf: Serves 8

2 lb	Buffalo meat
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2 ea.	Large Egg
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½ c	Italian bread crumbs
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½ c	Red onion
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2	Cloves minced garlic
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½ tsp	Dried oregano
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½ tsp	Dried basil
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6 oz	Prosciutto ham
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8 oz	Provolone cheese
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1 c	BBQ sauce
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2 Tbsp	Mrs. Dash Seasoning
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² RonJohn's Meatloaf recipe by Ron Olzak, Chef Apprentice at the Columbus Culinary Institute

Lesson 5-3

Real Kitchen Exercise

1. Chef is making the broccoli salad. There are $2\frac{1}{2}$ quarts of broccoli florets, $2\frac{1}{2}$ cups of crumbled bacon, two cups of chopped green onions, $\frac{1}{2}$ cup of sunflower seeds, and $\frac{3}{4}$ cups of raisins. $4\frac{1}{2}$ cups of dressing will be made to cover the salad. Just combining the vegetables, seeds, fruit and meat, how many cups of salad will be made? The recipe calls for twenty servings, so what will the serving size be?

2. Chef is making Avocado dip and plans on spreading 2 tsp of the dip on freshly made Melba toast for this appetizer. How many cups of Avocado dip are needed if chef plans to make 475 appetizers?

3. A block of cheese measures 8in. by 6in. by 2in. The chef wants us to make hors d'oeuvres by cutting up $\frac{1}{2}$ in. cheese cubes. How many blocks of cheese are needed to make 5000 cheese cubes?

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4. The restaurant has a delivery van that we have used three times today. On the first trip, we picked up twelve dozen eggs covering $18 \frac{1}{2}$ miles in the round trip. Immediately upon our return, the manager had us swing over to the butcher shop and pick up seven cases of steaks. That trip notched up $11 \frac{3}{4}$ miles. Later in the day, the dairy had our order ready, so we covered $12 \frac{2}{3}$ miles to make the pick up. What was the total amount of miles traveled that day? What was the average trip in miles?

5. Chef has the staff clean up the storage room. We find that we have eight bags of rice. A bag of rice weighs 20 pounds. Three are $\frac{3}{4}$ full, three are half-full, one is $\frac{1}{3}$ full and one is $\frac{1}{4}$ full. If we combine the rice, how many bags should we have? How many pounds of rice should we have?

6. Chef served pastries for the morning meal and there are 25% of the pastries left over. If we made 760 pastries, how many were served?

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7. Chef has the staff clean up the storage room. We find that we have six bags of oats. A bag of oats weighs 12 pounds. Two are $\frac{3}{4}$ full, two are half-full, one is $\frac{1}{3}$ full and one is $\frac{1}{4}$ full. If we combine the oats, how many bags should we have? How many pounds of oats should we have?

8. We add 3 quarts of water, 7 cups of broth, 2 pints of cream and 3 tbsp of lemon to make soup. How many fluid ounces of soup does chef have? How many gallons?

9. Chef asks you to spread cream cheese on each of 720 hors d'oeuvres. Each of the hors d'oeuvre has a $1\frac{1}{2}$ tsp of cream cheese. How many cups of cream cheese are required?

10. Fill in the blanks in this culinary story using the appropriate abbreviations. Do not use the same abbreviation twice.

Chef Linda went to the orchard and picked 1 bushel of apples. She stopped at the store and picked up a peck of fresh lemons. Her recipe calls for 9 apples each. However, she computes this to be 4 cups _____ of apples, which is a quart _____ or 2 pints _____. Her recipe calls for $\frac{1}{2}$ -teaspoon _____ of ginger and a teaspoon _____ of cinnamon. She also needs 2 tablespoons _____ of flour and a tablespoon _____ of fresh lemon juice. After serving the pie to the local business council, she signs a contract to deliver pies daily. Now she buys ingredients by the kilogram _____, gallon _____ and pound _____.

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