

Scaling a Recipe

When cooking and baking, we may find it necessary to increase or decrease the yield (the amount of what we are making) of a recipe. Yield may be expressed in quantity, serving, or portion. Increasing or decreasing the yield is called “scaling” a recipe. We can do it by multiplying and dividing each ingredient by a scaling factor.

For example:

Recipe: Peanut Butter and Jam Sandwiches
<i>Yield: 2 sandwiches</i>
4 slices of bread
30 mL peanut butter
30 mL jam

The yield of this recipe is **two** sandwiches. If we want to increase the yield to **four** sandwiches, we have to double the recipe—in other words, scale it by a factor of two.

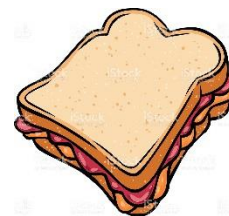
To double the recipe, we multiply each ingredient by two:

4 slices of bread $\times 2 = 8$ slices of bread
 30 mL peanut butter $\times 2 = 60$ mL peanut butter
 30 mL jam $\times 2 = 60$ mL jam

If we wanted to decrease the yield to just **one** sandwich, then we would divide the recipe by two—in other words, scale it by a factor of $\frac{1}{2}$.

To half the recipe, we divide each ingredient by two:

4 slices of bread $\div 2 = 2$ slices of bread
 30 mL peanut butter $\div 2 = 15$ mL peanut butter
 30 mL jam $\div 2 = 15$ mL jam



If we would like to make a specific yield—let’s say **nine** sandwiches—we have to determine what the scaling factor is. We can do this by dividing the yield that we want, by the original yield.

yield that we want \div original yield = scaling factor
 9 sandwiches \div 2 sandwiches = $9/2 = 4.5$

This means that our scaling factor is 4.5, so we would multiply each ingredient by 4.5 in order to scale the recipe to make nine sandwiches.

Use the following recipe to answer the questions on scaling.

Fresh Fruit Salad with Yogurt on the Side

Scrambled Eggs

Raspberry Scones

Coffee and Tea

Recipe: Fresh Fruit Salad

Yield: 1 portion

230 mL Fresh fruit (in season), chopped

Fresh mint, as a garnish

125 mL Yogurt



Recipe: Scrambled Eggs

Yield: 5 portions

6 Eggs

15 mL Milk

Butter

Procedure:

1. Mix eggs with milk
2. Turn into buttered skillet on medium heat
3. Stir while cooking Serve immediately

Recipe: Raspberry Scones

Yield: 24 scones

1 lbs All-purpose Flour

4 oz. Unsalted Butter, cold

30 mL Baking Powder

2 Egg Yolks

5 mL Baking Soda

11 oz. Cream

5 mL Salt

125 mL Raspberries

1.5 oz. Sugar



Procedure:

1. Mix flour, baking powder, baking soda, salt, sugar and raspberries together
2. Cut in cold butter until pea-sized
3. Add eggs and cream – mix very little
4. Roll out dough to thickness of 1 ½ inches, cut as desired.
5. Bake at 400° F. approximately 10 minutes

1. How many mL of prepared fruit will serve 35 portions? _____ mL
2. How many mL of prepared fruit will serve 50 portions? _____ mL
3. How many mL of yogurt will serve 30 portions? _____ mL
4. How many mL of yogurt will serve 20 portions? _____ mL

5. How many eggs will serve 40 portions of scrambled eggs? _____ eggs
6. How many eggs will serve 2 portions of scrambled eggs? _____ eggs
7. How many mL of milk will serve 3 portions? _____ mL

8. To **quadruple** the recipe for Raspberry Scones you need:

- a) _____ pounds of flour
- b) _____ egg yolks
- c) _____ ounces of cream
- d) _____ millilitres of salt
- e) _____ millilitres of raspberries

9. To make **12** Raspberry Scones you need:

- a) _____ ounces of butter
- b) _____ egg yolks
- c) _____ ounces of cream
- d) _____ millilitres of salt
- e) _____ ounces of sugar

10. If 1 lb. coffee yields approximately 25 servings, how many pounds will be needed for 400 servings?

_____ lbs

11. If 1 lb. of tea yields approximately 175 servings, how many pounds of tea will be needed for 60 servings? _____ lbs

Remember: The line in a fraction means "divide". Some ingredient measurements have fractions in them, like this:

$$2 \frac{3}{4} \text{ oz}$$

To solve problems with these types of measurements, we must first convert that fraction into a decimal by dividing. Then we add that decimal to the whole number.

$$2 \frac{3}{4}$$

Step 1: $\frac{3}{4} = 3 \div 4$
= 0.75

Step 2: $2 + 0.75$
= 2.75 oz

Now this number can be easily multiplied, divided, added, or subtracted.

*For a review of fractions, please see the **Fractions Study Guide** and the **General Math Study Guide**.*

Scaling a Recipe: Answer Sheet

- 1) 8 050 ml
- 2) 11 500 ml
- 3) 3 750 ml
- 4) 2 500 ml
- 5) 48
- 6) 2.4
- 7) 9
- 8)
 - a) 4 lbs
 - b) 8
 - c) 44
 - d) 20 ml
 - e) 500
- 9)
 - a) 2 oz.
 - b) 1
 - c) 5.5 oz.
 - d) 2.5 ml
 - e) 0.75 oz.
- 10) 16 lbs
- 11) 0.34 lbs