

Unit Conversions & Scaling

Please review [Study Guide 3: Unit Conversion](#) and [Study Guide 4: Scaling a Recipe](#) before proceeding with this study guide.

After scaling a recipe, it may be more efficient for you to convert the unit of some ingredients as well. For example, if a recipe including 200 mL of flour is scaled by a factor of 20, it may be useful to convert this measure to litres, so that you only have to measure out 4 L rather than measuring out 200 mL, 20 times. This example is illustrated below.

| Recipe: |
|-------------------------|
| <i>Yield: 1 portion</i> |
| 200 mL flour |
| 100 mL sugar |
| 18 oz. butter |
| 2 eggs |
| 15 mL baking powder |

Sample Question 1: How many litres of flour are needed to make 20 portions?

Step 1: Scale the recipe

$$200 \text{ mL} \times 20 = 4000 \text{ mL}$$

Step 2: Convert the units using the conversion table

$$4000 \text{ mL} / 1000 \text{ mL} = 4 \text{ L}$$

Find the attached
conversion table on the
last page of the study
guide

Some situations may require two conversions, as in the following sample question.

Sample Question 2: How many kilograms of butter are needed to make 75 portions?

Step 1: Scale the recipe.

$$18 \text{ oz} \times 75 = 1350 \text{ oz}$$

Step 2: Look at the conversions given for ounces on the conversion table. There is not one listed directly from ounces to kilograms, but there is one listed from ounces to grams. We know that there are 1000 grams in one kilogram, so we can determine the measure in kilograms after.

$$1 \text{ ounce} = 28 \text{ grams (from conversion table)}$$

$$1350 \text{ oz} \times 28 = 37\,800 \text{ g}$$

Step 3: Convert to kilograms by dividing by 1000.

$$37\,800 \div 1000 = 37.8 \text{ kg}$$

To review simple
metric and imperial
conversions, please
refer to **Study Guide
3: Unit Conversion.**

Use the following recipe to answer the questions.

Sandwiches

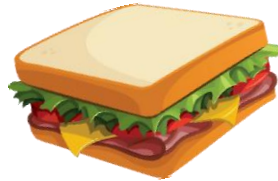
Cinnamon Buns

Coffee and Tea

Recipe: Sandwiches

Yield: 1 portion

- 2 slices of multigrain bread
- 2 slices of swiss cheese
- 0.25 lbs of smoked steak
- 60 mL mixed greens
- 15 mL dijon dressing



Recipe: Cinnamon Buns

Yield: 18 cinnamon buns

- 1.75 lbs All-purpose Flour
- 12 oz. Butter, softened
- 35 mL Baking Powder
- 2 Eggs
- 5 mL Salt
- 25 mL Cinnamon
- 80 oz. Sugar



Procedure:

1. Mix flour, baking powder, salt, and sugar together
2. Add butter and eggs
3. Roll out dough to thickness of 1 ½ inches
4. Spread remaining butter, sugar, and cinnamon onto dough
5. Roll up, cut into 18 sections and place on baking tray
6. Bake at 350° F. approximately 30 minutes

1. How many ounces of mixed greens are needed to make 8 sandwiches? _____ oz.
2. How many ounces of dijon dressing are needed to make 25 sandwiches? _____ oz.
3. How many grams of smoked steak are needed to make 32 sandwiches? _____ g

4. How many grams of flour are needed to make 50 cinnamon buns? _____ g
5. How many millilitres of butter are needed to make 10 cinnamon buns? _____ mL
6. How many ounces of cinnamon are needed to make 12 cinnamon buns? _____ oz.

7. To **triple** the recipe for Cinnamon Buns you need:

- a) _____ kilograms of flour (hint: convert to grams first)
- b) _____ ounces of cinnamon
- c) _____ ounces of baking powder
- d) _____ ounces of salt
- e) _____ litres of sugar



8. To make **12** Cinnamon Buns you need:

- a) _____ ounces of flour
- b) _____ ounces of cinnamon
- c) _____ ounces of baking powder
- d) _____ ounces of salt
- e) _____ millilitres of butter

9. If 1 pound of coffee makes 25 portions, how many kilograms are needed to make 100 portions?

10. If 2 pounds of tea makes 30 portions, how many grams are needed to make 12 portions?

Unit Conversions & Scaling: Answer Sheet

- 1) 16.8 oz.
- 2) 13.1 oz.
- 3) 3632 g
- 4) 2206.9 g
- 5) 0.23 oz.
- 6) 0.58 oz.
- 7)
 - a) 2.38 kg
 - b) 2.63 oz.
 - c) 3.68 oz.
 - d) 0.53 oz.
 - e) 6.8 L
- 8)
 - a) 18.67 oz.
 - b) 0.58 oz.
 - c) 0.82 oz.
 - d) 0.12 oz.
 - e) 227.2 mL
- 9) 1.82 kg
- 10) 363.2 g

Conversion Table

| Weight | |
|---------------|---------------|
| 1 ounce | = 28.35 grams |
| 1 gram | = .0353 ounce |
| 16 ounces | = 1 pound |
| 1 pound | = 454 grams |
| 1 kilogram | = 2.2 pounds |

| Volume | |
|---------------|--------------------|
| 1 milliliter | = .0353 ounces |
| 1 fluid ounce | = 28.35 milliliter |
| 1 litre | = 35.2 fluid ounce |
| 1 milliliter | = .001 litre |

| Abbreviations | |
|----------------------|-------|
| ounce | = oz. |
| gram | = g |
| pound | = lb. |
| kilogram | = kg |
| millilitre | = mL |
| litre | = L |

| Temperature | |
|--------------------|---------------------------|
| F | = $(1.8 \times C) + 32$ |
| C | = $(5/9) \times (F - 32)$ |