

Grade 6 - Converting Measurement Units with Ratios - Lesson

Common Core 6.RP.A.3d · maths-pdf.fr/en/

This **unit conversions lesson** for 6th Grade covers converting measurement units with ratios (Common Core 6.RP.A.3d), with a free PDF to print.

To convert measurement units, use a ratio between the two units. Multiply when changing a larger unit to a smaller unit, such as feet to inches, and divide when changing smaller to larger. For example, 3 feet is 3 times 12, or 36 inches. Ratio tables and double number lines show the same conversion.

Grade 6 · Common Core State Standards: **6.RP.A.3d**

Key facts in this unit conversions lesson

Key facts

- A conversion factor is a ratio between two units, like 12 inches to 1 foot.
- Larger unit to smaller unit: multiply. Smaller to larger: divide.
- Metric conversions use 10, 100, and 1,000.
- Convert to the same unit before comparing amounts.
- Rates can be converted by converting each unit in turn.

What does it mean to convert units?

Converting changes how an amount is measured without changing the amount. Three feet and one yard are the same length. Every conversion uses a ratio, such as 12 inches to 1 foot, so ratio tables and double number lines work well.

Conversion factor

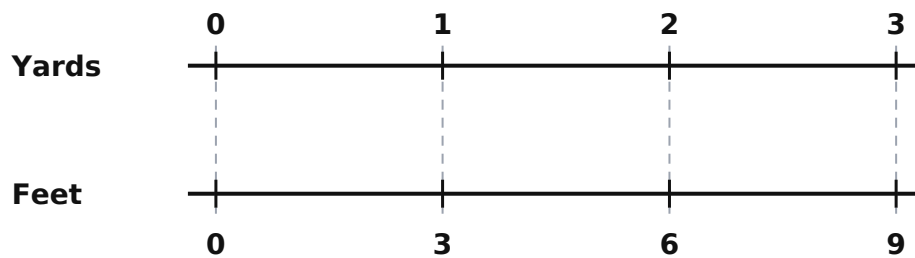
A **conversion factor** is a ratio that compares two units for the same amount. Examples:
 $1 \text{ ft} = 12 \text{ in}$ and $1 \text{ km} = 1,000 \text{ m}$.

Unit	Equals
1 foot	12 inches
1 mile	5,280 feet
1 pound	16 ounces
1 gallon	4 quarts
1 meter	100 cm
1 kilogram	1,000 g

Conversion facts to know.

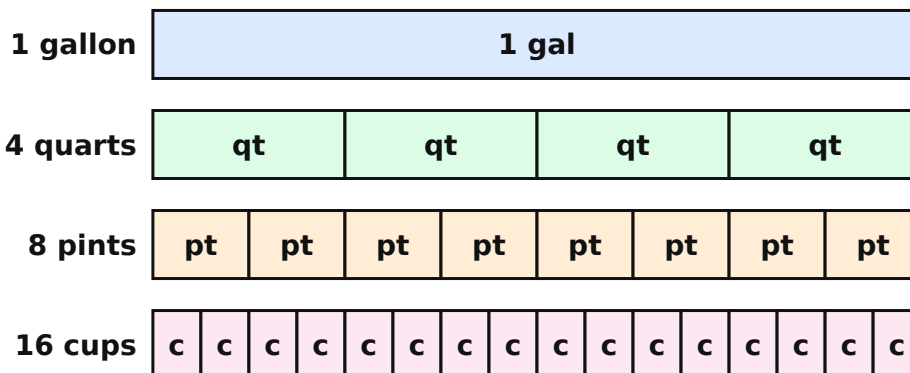
When do you multiply and when do you divide?

- Going from a larger unit to a smaller unit: **multiply**. You need more small units.
- Going from a smaller unit to a larger unit: **divide**. You need fewer big units.



1 yard = 3 feet, so yards are multiplied by 3 to get feet.

For metric units, the factors are powers of ten, so the decimal point moves. To convert 3.2 km to meters, $3.2 \times 1000 = 3200$ m.

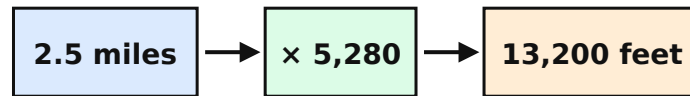


Each row is the same amount of liquid in smaller and smaller units.

How do you convert with a ratio?

1. Write the conversion fact as a ratio, such as 5,280 feet to 1 mile.

2. Decide whether the new unit is smaller (multiply) or larger (divide).
3. Compute, and write the unit in your answer.
4. Check that the number makes sense: smaller units give bigger numbers.



Larger unit to smaller unit: multiply.

Example: A car goes 60 miles per hour. To find feet per minute, change miles to feet and hours to minutes: $60 \times 5280 = 316,800$ feet per hour, then $316,800 \div 60 = 5,280$ feet per minute.

You can also treat units like factors that cancel. Writing $3 \text{ yd} \times \frac{3 \text{ ft}}{1 \text{ yd}} = 9 \text{ ft}$ shows the yards cancel and feet remain. If your units do not cancel to the unit you want, you used the conversion factor upside down. This unit check catches most errors, and it works for rates too.

Always compare lengths, weights, or volumes in the same unit. To decide whether 2.5 yards or 80 inches is longer, change 2.5 yards to $2.5 \times 36 = 90$ inches.

Unit conversions lesson: questions and answers

How do you convert feet to inches?

Multiply the number of feet by 12, because 1 foot equals 12 inches. For example, 3 feet is 36 inches.

How do you know whether to multiply or divide when converting?

If you change to a smaller unit, you need more of them, so multiply. If you change to a larger unit, you need fewer, so divide.

What are the common customary units of capacity?

One gallon equals 4 quarts, 8 pints, or 16 cups. One cup equals 8 fluid ounces.

How do you convert metric units?

Multiply or divide by powers of 10. For example, 1 meter is 100 centimeters and 1 kilometer is 1,000 meters.

How do you convert miles per hour to feet per minute?

Multiply by 5,280 to change miles to feet, then divide by 60 to change hours to minutes. So 60 miles per hour is 5,280 feet per minute.

How to use this unit conversions lesson

Read the definitions first, then follow the worked method line by line and redo the example on paper without looking. When every step makes sense, move on to the worksheet, then check yourself with the quiz.

Download the unit conversions lesson as a PDF with the button below and keep it with your notes.