

Grade 4 - Measurement Units and Conversions - Lesson

Common Core 4.MD.A.1, 4.MD.A.2 · maths-pdf.fr/en/

Measurement units tell how long, how heavy, or how much liquid something is. To change a larger unit into a smaller unit, multiply by the number of small units in one large unit. For example, 1 kilometer is 1,000 meters, so 3 km is 3,000 m. Smaller units give bigger numbers.

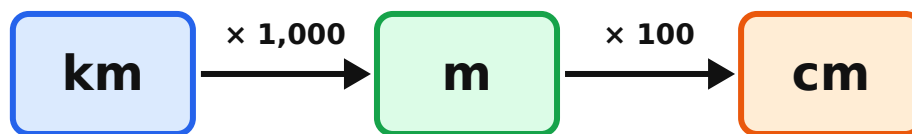
Grade 4 · Common Core State Standards: **4.MD.A.1, 4.MD.A.2**

Key facts

- 1 km = 1,000 m and 1 m = 100 cm.
- 1 kg = 1,000 g and 1 L = 1,000 mL.
- 1 lb = 16 oz, 1 hr = 60 min, and 1 min = 60 sec.
- Larger unit to smaller unit: multiply, and the number gets bigger.
- Change both amounts to the same unit before you add or subtract.

What are measurement units?

Every measurement has a number and a unit. The unit tells what you are counting: kilometers for long trips, grams for light things, milliliters for small amounts of liquid, minutes for time. One amount can be written in different units, just like one dollar can be four quarters.



larger unit to smaller unit

Going from a larger unit to a smaller unit means multiplying.

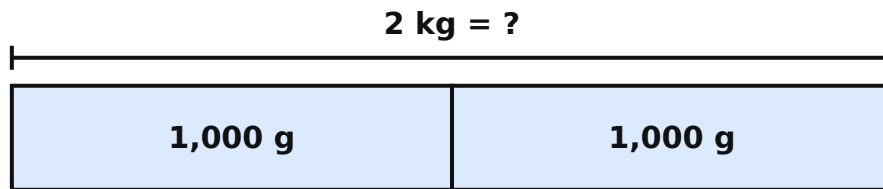
Unit facts to know

What we measure	Larger unit	Smaller unit
Length	1 km	1,000 m
Length	1 m	100 cm

What we measure	Larger unit	Smaller unit
Mass	1 kg	1,000 g
Liquid volume	1 L	1,000 mL
Weight	1 lb	16 oz
Time	1 hr	60 min
Time	1 min	60 sec

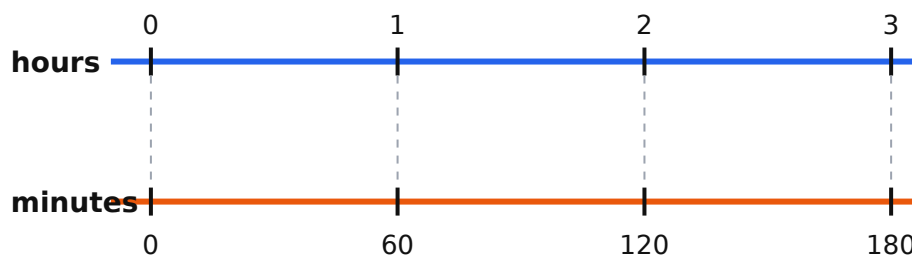
How do you change a larger unit into a smaller unit?

A small unit is tiny, so you need many of them to match one big unit. That is why you multiply. Look at the bar: one kilogram is a block of 1,000 grams, and 2 kilograms are two blocks.



Each block is 1 kg = 1,000 g.

So $2 \text{ kg} = 2 \times 1,000 = 2,000 \text{ g}$. Time works the same way. The double number line shows that 3 hours match 180 minutes.



Each hour matches 60 minutes.

How do you solve a measurement word problem?

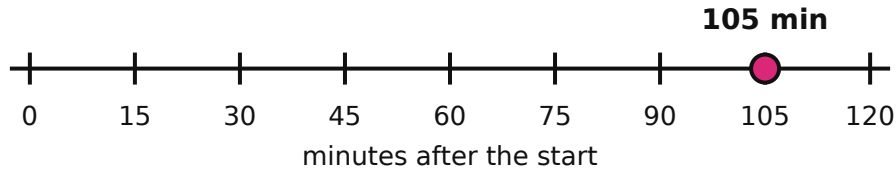
Write every amount in the same unit first. Then add, subtract, or multiply.

Example. Liam bikes 2 km 600 m to school and the same way home. How many meters does he bike in all?

1. Change 2 km to meters: $2 \times 1,000 = 2,000 \text{ m}$.
2. Add the extra meters: $2,000 + 600 = 2,600 \text{ m}$ one way.

3. Two trips: $2 \times 2,600 = 5,200$ m.

Liam bikes **5,200 m**, which is 5 km 200 m. For time, remember that minutes roll over at 60: 1 hr 45 min is $60 + 45 = 105$ min.



Mark: 1 hr 45 min is 105 minutes.

Questions about measurement units and conversions

What is the difference between metric and customary units?

Kilometers, meters, centimeters, kilograms, grams, liters, and milliliters are metric units, and they use 10, 100, and 1,000. Pounds and ounces are customary units, and 1 pound is 16 ounces.

Why do you multiply to change a larger unit to a smaller unit?

A smaller unit fits many times into a larger one. If 1 km holds 1,000 m, then 5 km holds 5 groups of 1,000 m, so you multiply 5 by 1,000.

How do you write 3 hr 20 min in minutes?

Change the hours first: 3 hr is $3 \times 60 = 180$ min. Then add the extra 20 minutes to get 200 minutes.

How do you add measurements that use different units?

Change them to the same unit before adding. For example, add 2 kg and 500 g by writing 2 kg as 2,000 g, then $2,000 + 500 = 2,500$ g.

How many ounces are in a pound?

There are 16 ounces in 1 pound. So 2 pounds are $2 \times 16 = 32$ ounces, and 4 pounds are 64 ounces.