

Liters (L), milliliters (mL), and deciliters (dL)

Definition

A liter (L) is a measure of (usually liquid) volume. A cube 10 centimeters (cm) on each side is equal to a liter, though a liter can be any shape.

A milliliter (mL or ml) is 1/1000 of a liter. It's equal in volume to a cubic centimeter (cm³ or cc).

A deciliter (dL) is 1/10 of a liter.

A “drop” is not an official measurement because actual drops of liquid come in many sizes. However, a general rule is that there are 20 “drops” in one mL.



Uses

Liters are the standard way to measure large amounts of liquid, especially water, in scientific laboratories. Water contamination is usually measured in milligrams or micrograms of the contaminant per liter of water (mg/L or µg/L).

One liter of water (but not other liquids) has a mass of one kilogram (kg). This means that you can convert mg/L to “parts per million” and µg/L to “parts per billion” when describing water contamination. Can you find the million-to-one relationship in mg/L?

Milliliters are used for smaller measures of liquid, like liquid medicine. One mL of water has a mass of one gram (g).

Deciliters (dL) are used in giving blood test results, but aren't common to see elsewhere.

Examples

- A liter is a little bigger than a quart. There are about 3.8 liters in a gallon.
- The most common size for a large bottle of soda/pop is two liters, which holds a little less than a six-pack of 12-ounce cans.
- A typical bottle of wine is 750 mL, or 3/4 of a liter.
- A 12-cup coffee carafe is about 1.5 L.
- There are 5 mL in one teaspoon.
- One dL is a little less than half of a measuring cup.



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Launch the Discussion

Remind or tell the group why you're covering this topic (it came up at a previous meeting, it's a key to understanding something the group has identified as a priority, etc.) Ask the group:

Has anyone heard of a liter before?

What's an example of a liter?

Which do you think is closer to a liter? (Read the list and have participants vote, but don't give an answer until they have had a chance to guess.)

- A measuring cup? (about $1/4$ of a liter)
- A quart? (a quart is a little less than a liter)
- A gallon? (3.8 liters)

Fact Sheet

Pass out the Fact Sheet. Review key points. Discuss with the group how it connects to their work.

Activities

Display several empty bottles or containers of different shapes and sizes, labeled A, B, C, etc. At least one should be a liter. If possible, include a 10 cm x 10 cm x 10 cm cube. Write down the capacity of each bottle, for your own notes. Remove or cover any labels on the bottles that say how much they hold.

Have participants guess which one is a liter. Have a jug or pitcher of water handy so people can check their guesses and compare by pouring water from a smaller container into a larger one.