

The Metric System Unit Conversion

Sycamore Canyon School

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What is the Metric System?

The Metric System is:

The decimal measuring system based on the:

- Meter (for length)
- Liter (for volume) and
- Grams (for mass)

Fun Fact: French astronomer and mathematician Gabriel Mouton first proposed this system in the 1600s. By 1790 it was standardized in France.

The Easy Way to Learn the Metric System

Think of this system as bands on a line

Unit of
Measurement
– One of the 3
below:

kilo

hecto

deca

deci

centi

milli

- meter for length
- liter for volume
- grams for mass

I'll Never Remember This!

Wrong!

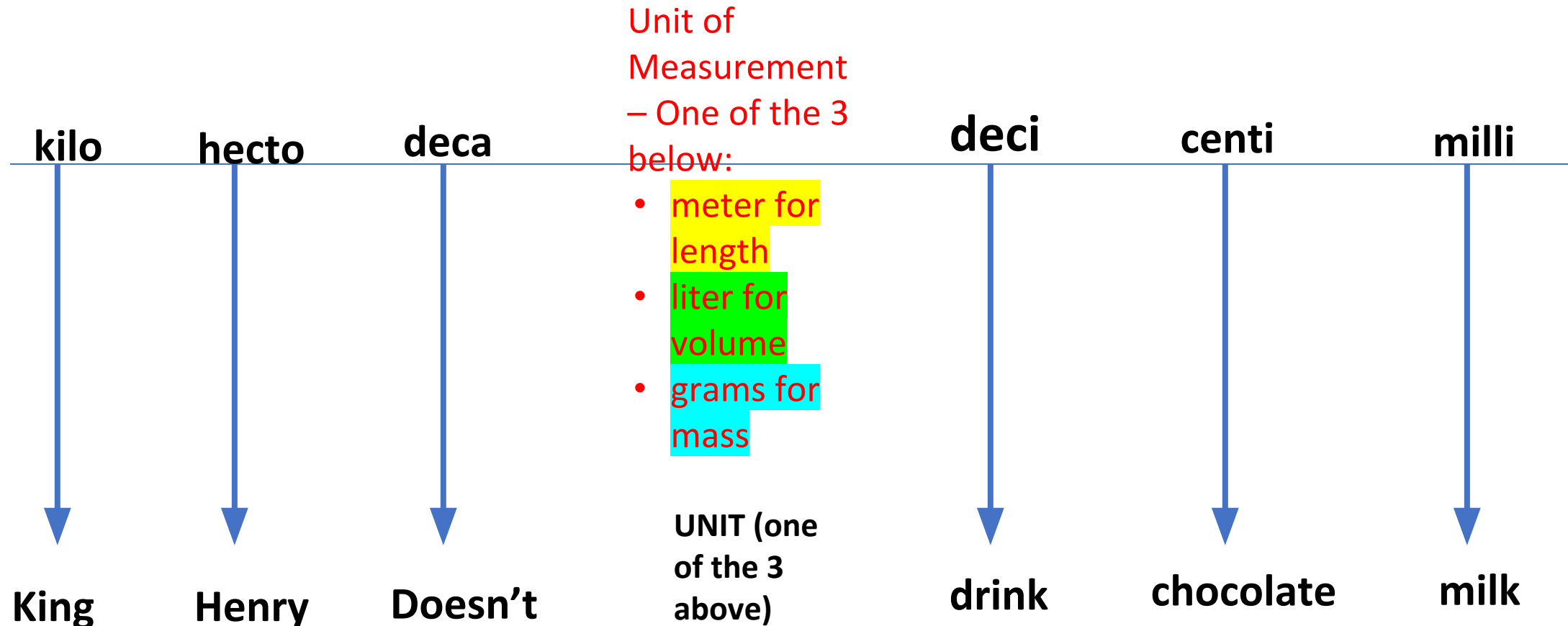
Yes, you will!

Just think of.....

King Henry doesn't usually drink chocolate milk

Let's try this again!

Think of this system as bands on a line



Converting between metric units.....

- 1) Look at the band system we drew
- 2) Determine which unit we are converting **from** and which unit we are converting **to**.
- 3) Count the number of spots we are moving on the band system between the two units.
- 4) Move the decimal point, that many spots (to the right or left, depending on the two units we are converting between)

Relax! 😊 This will make sense when we practice.

Example #1

Watch me on the white board....

Convert 7 meters to centimeters (cm)

Example 2

Watch me on the white board....

Convert 17 liters to milliliters (mL)

Example 3

Watch me on the whiteboard....

50,000 milligrams (mg) to grams (g)

CP and Honor's Students, You may stop here
and work on your assignment 😊
Honors students,
then we have a little bit more to go.... 😊

How to deal with two-variable conversions

Sometimes we have a fraction (ratio), with a unit on top and a unit on bottom and we need to address both the top and the bottom in the conversion.

How to deal with two-variable conversions

For example:

- Converting kilometers *per** hour (KM/hour) to meters *per** second (m/s).
- * when you see the word, “per” you know you have a fraction (ratio)

Two-Variables? No Problem

We will address the top and bottom of the ratio one at a time - in a very long multiplication problem - cancelling units, until we are left with the desired units 😊

Example – Two Variable Conversion

- Let's convert 100 kilometers *per** hour (Km/hour) to meters per second (m/s).
- I will convert Km to meters first, then Hr. to seconds.

$$\begin{array}{ccccccc} \underline{100 \text{ Km}} & \times & \underline{1000 \text{ meter}} & \times & \underline{1 \text{ Hr.}} & \times & \underline{1 \text{ minutes}} & = & \underline{28 \text{ meters}} \\ 1 \text{ Hr.} & & 1 \text{ Km} & & 60 \text{ minutes} & & 60 \text{ seconds} & & \text{seconds} \end{array}$$

Example 2

- **The average cruising flight speed for commercial jets is around 540 mph.** What is the speed in meters per second? (1 km = 0.621 mile)
- Not a problem! You just need to know the conversion factors (you can look them up online and even use an online calculator to check your work after you do the calculation by hand!).
- I'll deal with the miles first, then the hours

$$\begin{array}{ccccccc} \bullet & \underline{540 \text{ miles}} & \times & \underline{1 \text{ km}} & \times & \underline{1000 \text{ meter}} & \times & \underline{1 \text{ Hr.}} & \times & \underline{1 \text{ minutes}} & = & \underline{242 \text{ meter}} \\ & & & & & & & & & & & & \\ & 1 \text{ Hr.} & & 0.621 \text{ miles} & & 1 \text{ km} & & 60 \text{ minutes} & & 60 \text{ seconds} & & & \text{seconds} \end{array}$$