

The Metric System



What is it?

- Also known as the “International System of Units”, or “SI units”
- The official system of measurement in almost every country around the globe
 - Designed to be universal!
- First introduced in 1799 in France
- Internationally agreed-upon in 1960

Why use it?

U.S. (Imperial) System

- 1 pound = 16 ounces
- 1 gallon = 128 fluid ounces
- 1 yard = 36 inches

Metric System

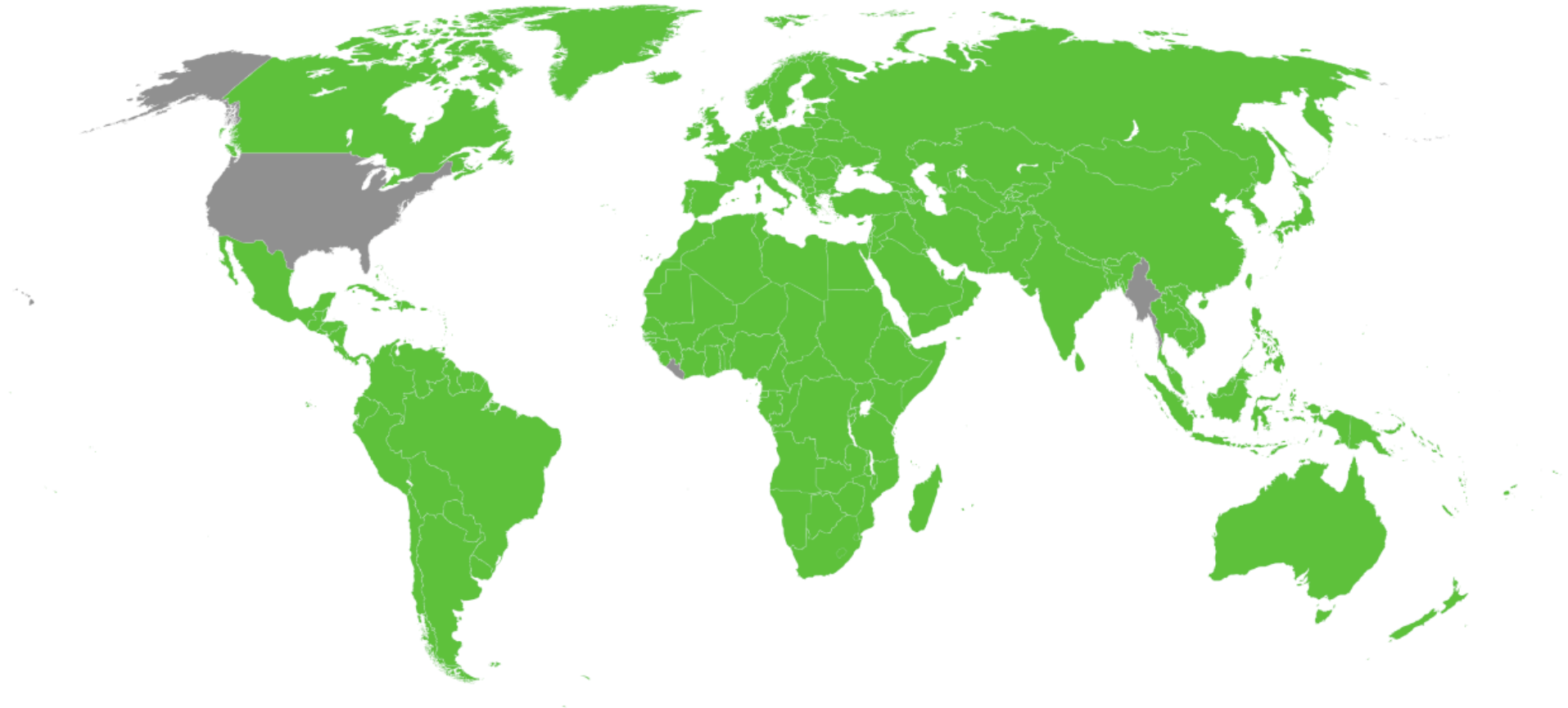
- 1 kilogram = 1000 grams
- 1 liter = 1000 milliliters
- 1 meter = 100 centimeters

Conclusion: Conversions are much simpler in the metric system!

Why use it?

- Converting between measurements in the metric system just requires you to multiply or divide by powers of 10.
- Ex: 1 meter = 10 decimeters
= 100 centimeters
= 1000 millimeters

Why use it?



Countries in **green** use the metric system predominantly

How do we use it?

Step 1: Pick the right “base unit”

Three commonly-used base units:

1. **Meters** – for length
2. **Liters** – for volume
3. **Grams** – for mass

Try it yourself!

Which base unit would be the most appropriate to measure...

1. The length of a table?
 - a) Meter
 - b) Liter
 - c) Gram

Try it yourself!

Which base unit would be the most appropriate to measure...

2. The mass of a cell phone?

- a) Meter
- b) Liter
- c) Gram

Try it yourself!

Which base unit would be the most appropriate to measure...

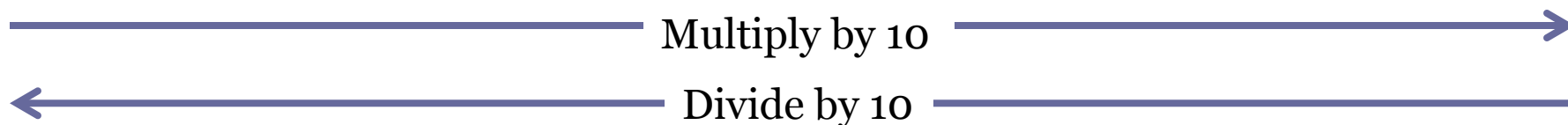
3. The amount of gasoline in a car?
 - a) Meter
 - b) Liter
 - c) Gram

Step 2: Pick the right adjustment

- It may not always be practical for us to use one of the base units (meters, liters, or grams) for our measurements.
- For example, if you're measuring the width of your pinky, measuring it in meters may not be the best idea.
 - We'll need to divide up our meter stick into more convenient units.

kilo- Kids	hecto- hate	deka- doing		deci- darn	centi- crazy	milli- metrics!
kilometer kiloliter kilogram	hectometer hectoliter hectogram	dekameter dekaliter dekagram	meter liter gram	decimeter deciliter decigram	centimeter centiliter centigram	millimeter milliliter milligram
km kL kg	hm 1)___ 2)___	dkm 3)___ dkg	m L g	4)___ dL 5)___	6)___ 7)___ cg	mm 8)___ 9)___

Ex: 0.001 km 0.01 hm 0.1 dkm 1 meter 10 dm 100 cm 1000 mm



- We use a system of **prefixes** to show that we are multiplying or dividing the **base unit** by a factor of ten.
- Ex: A “**centimeter**” is exactly 0.01 **meters** long

Try it!



The average soda can contains 355 milliliters of soda.

How many liters is this?

Metric Prefix Table

<u>Prefix</u>	<u>Symbol</u>	<u>Multiplier</u>	<u>Exponential</u>
giga	G	1,000,000,000	10^9
mega	M	1,000,000	10^6
kilo	k	1,000	10^3
hecto	h	100	10^2
deca	da	10	10^1
		1	10^0
deci	d	0.1	10^{-1}
centi	c	0.01	10^{-2}
milli	m	0.001	10^{-3}
micro	μ	0.000001	10^{-6}
nano	n	0.000000001	10^{-9}

Let's practice

1. $58.6 \text{ m} = \underline{\hspace{2cm}} \text{ mm}$
2. $730 \text{ L} = \underline{\hspace{2cm}} \text{ cL}$
3. $13 \text{ kg} = \underline{\hspace{2cm}} \text{ g}$
4. $86.4 \text{ L} = \underline{\hspace{2cm}} \text{ dkL}$
5. $6534 \text{ mg} = \underline{\hspace{3cm}} \text{ kg}$