LENGTH

A STANDARD UNITS OF LENGTH

Discover: We can measure length in many ways, for example with our footsteps or with paper clips. But everyone's footsteps and paper clips are different sizes! How can we share our measurements if we all use different units?
To solve this, people all around the world agreed to use the same units. We call these **standard units**. One very common standard unit for length is the **meter**.

Definition **Length**

Length is the distance from one point to another. It tells us how long something is or how far it goes.

Definition **Units of Length**

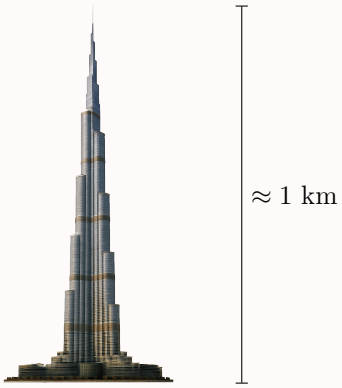
We use different units for measuring small and large things.

- **Millimeter** (mm): A very small unit of length, about the thickness of a coin.

- **Centimeter** (cm): A small unit of length, about the width of your finger.

- **Meter** (m): A longer unit of length, about the height of a 6-year-old girl.

- **Kilometer** (km): A very large unit of length, used for long distances, like the distance between towns. It is about the height of the Burj Khalifa in Dubai, United Arab Emirates.



B CONVERSION OF LENGTH UNITS

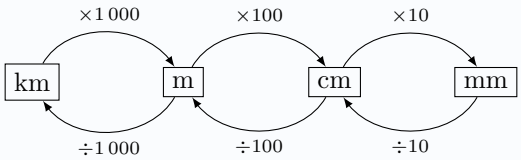
Definition **Conversion of Length Units**

Here are some useful metric conversions:

- 1 **km** = 1 000 **m**
- 1 **m** = 100 **cm**
- 1 **cm** = 10 **mm**

Method **Converting with Multiplication or Division**

- Use **multiplication** when you go from a **bigger** unit to a **smaller** one (e.g., m → cm).
- Use **division** when you go from a **smaller** unit to a **bigger** one (e.g., cm → m).



Method **Converting Using a Table**

To convert between units of length, we can use a metric place value table. This table shows the main metric units from kilometers to millimeters. Each column represents one step of 10 or 100 or 1 000 between units. Let's convert **1.2 meters** to **centimeters**.

1. **Draw the full metric place value table.**

km			m		cm	mm

2. **Place the number in the table.**
   The rule is: the digit in the **ones place** goes in the starting unit's column.
   For 1.2 m, the ones digit is 1, so it goes in the **m** column. The digit 2 (the tenths) goes in the next column to the right.

km			m		cm	mm
			1	**2**		

3. **Fill any empty spaces with zeros** until you reach your target unit.
   Our target unit is **cm**, so we put a 0 in the **cm** column.

km			m		cm	mm
			1	2	**0**	

4. **Read the final number.**
   Now read the digits as a number in centimeters:

$$1.2 \text{ m} = 120 \text{ cm}.$$

   This matches the fact that we multiply by 100 when converting m to cm.