

Metric Units for Measuring Length

The basic unit in the metric system is the meter. All of the other metric units for measuring length have the word “meter” in them.

The conversion factors in the metric system are based on 10. That is why you will use either 10, 100, or 1,000 when changing one metric unit of length to another.

10 millimeters makes 1 centimeter.
 10 centimeters makes 1 decimeter.
 10 decimeters makes 1 meter. And so on.

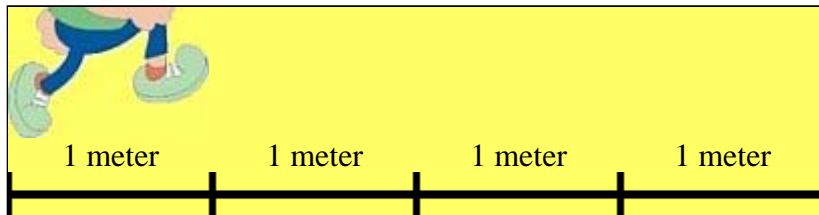
Units of length in the metric system

10	kilometer	km	1,000 meters
10	hectometer	hm	(not used)
10	decameter	dam	(not used)
10	meter	m	the basic unit
10	decimeter	dm	(not used much)
10	centimeter	cm	look at your ruler!
10	millimeter	mm	look at your ruler!

Remember that 1 meter is very close to 1 yard. 1 meter is a tiny bit longer than 1 yard.

1. Outside, or in a long corridor or room, draw two lines that start at the same place.

- a. Using a measuring tape, mark on the one line 1 m, 2 m, 3 m, and 4 m. Can you take “hops” 1 meter long?



- b. Mark on the second line marks from 1 foot to 13 feet. Make 1-yard hops. Compare: do the two kinds of hops feel about the same?



2. Measure how tall you and other people are in centimeters. Write it also using whole meters and centimeters.

Name	How tall
	_____ cm = <u>1</u> m _____ cm.

Conversions between units

Remember what millimeters look like on your ruler. $10 \text{ mm} = 1 \text{ cm}$.
Decimeters aren't usually marked on rulers. $10 \text{ centimeters make } 1 \text{ decimeter}$.
 $10 \text{ decimeters end up being } 100 \text{ centimeters, and that is } 1 \text{ meter}$.

$$1 \text{ km} = 1,000 \text{ m}$$

$$1 \text{ m} = 100 \text{ cm}$$

$$1 \text{ cm} = 10 \text{ mm}$$

3. Convert between meters, centimeters, and millimeters.

a. $5 \text{ m} = \underline{\hspace{2cm}} \text{ cm}$ $12 \text{ m} = \underline{\hspace{2cm}} \text{ cm}$ $6 \text{ m } 20 \text{ cm} = \underline{\hspace{2cm}} \text{ cm}$	b. $4 \text{ m } 6 \text{ cm} = \underline{\hspace{2cm}} \text{ cm}$ $10 \text{ m } 80 \text{ cm} = \underline{\hspace{2cm}} \text{ cm}$ $9 \text{ m } 9 \text{ cm} = \underline{\hspace{2cm}} \text{ cm}$	c. $800 \text{ cm} = \underline{\hspace{2cm}} \text{ m}$ $239 \text{ cm} = \underline{\hspace{1cm}} \text{ m } \underline{\hspace{1cm}} \text{ cm}$ $407 \text{ cm} = \underline{\hspace{1cm}} \text{ m } \underline{\hspace{1cm}} \text{ cm}$
d. $58 \text{ mm} = \underline{\hspace{1cm}} \text{ cm } \underline{\hspace{1cm}} \text{ mm}$ $78 \text{ cm} = \underline{\hspace{2cm}} \text{ mm}$ $234 \text{ mm} = \underline{\hspace{1cm}} \text{ cm } \underline{\hspace{1cm}} \text{ mm}$	e. $5 \text{ km} = \underline{\hspace{2cm}} \text{ m}$ $57 \text{ km} = \underline{\hspace{2cm}} \text{ m}$ $5,000 \text{ m} = \underline{\hspace{2cm}} \text{ km}$	f. $2 \text{ km } 800 \text{ m} = \underline{\hspace{2cm}} \text{ m}$ $6 \text{ km } 50 \text{ m} = \underline{\hspace{2cm}} \text{ m}$ $60,000 \text{ m} = \underline{\hspace{2cm}} \text{ km}$

4. Calculate. Give your answer using kilometers and meters.

a. $5 \text{ km } 200 \text{ m} + 8 \text{ km } 900 \text{ m}$

b. $3 \times 2 \text{ km } 800 \text{ m}$

c. $1,500 \text{ m} + 2 \text{ km}$

d. $6 \times 700 \text{ m}$

5. Solve the problems.

a. How many millimeters are in a meter?**b.** Mary can walk 1 km in 10 minutes. How far can she walk in 34 minutes?**c.** John jogs through a track 1 km 800 m long twice a day, five days a week. How long a distance does he jog in a week?**d.** A 10-meter wall is divided into five segments (not of equal length). Four of the segments are 1 m 20 cm each; how long is the fifth segment?**e.** Kathy's wallpaper has butterflies that are 80 mm wide. She will put the wallpaper in her room. How many complete butterflies can she have on a wall 3 meters long?