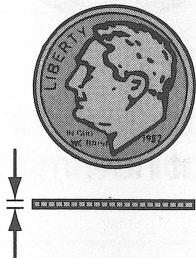


# Introducing the Metric Units of Measure

In the metric measurement system, the common units for measuring length are **millimeter**, **centimeter**, **meter**, and **kilometer**.

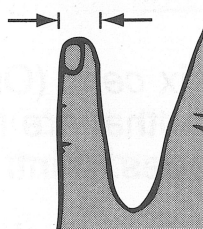
Think about these objects to help you visualize the metric units of length.

1 millimeter



thickness of a dime

1 centimeter



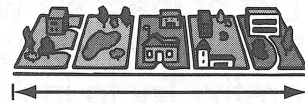
width of your smallest finger

1 meter



stride length for a tall person

1 kilometer



length of five city blocks

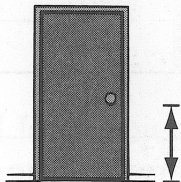
Fill in the blank with the letter that matches the distance indicated in each picture. The pictures do not show actual sizes.

a. 1 millimeter

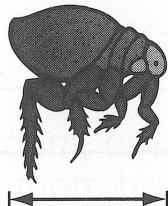
b. 1 centimeter

c. 1 meter

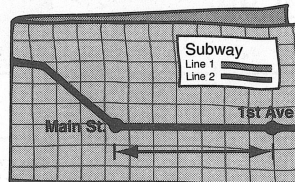
d. 1 kilometer



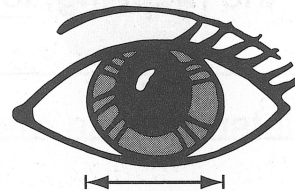
\_\_\_\_\_



\_\_\_\_\_



\_\_\_\_\_



\_\_\_\_\_

Choose a unit of measure that makes sense for measuring each distance: millimeter, centimeter, meter, or kilometer. (There may be more than one correct answer.)

length of a river \_\_\_\_\_

length of your thumb \_\_\_\_\_

depth of the ocean \_\_\_\_\_

height of a school building \_\_\_\_\_

thickness of a penny \_\_\_\_\_

distance you can throw a ball \_\_\_\_\_

length of a dollar bill \_\_\_\_\_

length of a butterfly's wing \_\_\_\_\_

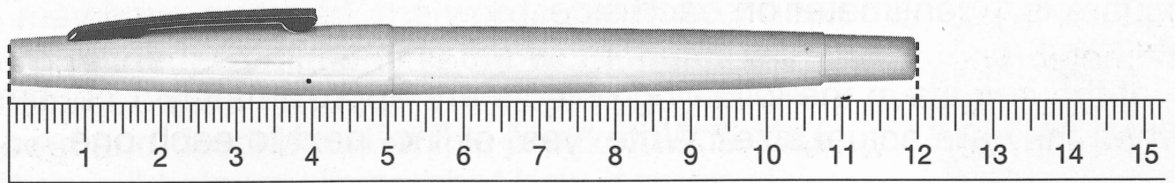
your height \_\_\_\_\_

distance you cycle in an hour \_\_\_\_\_

height of a coffee cup \_\_\_\_\_

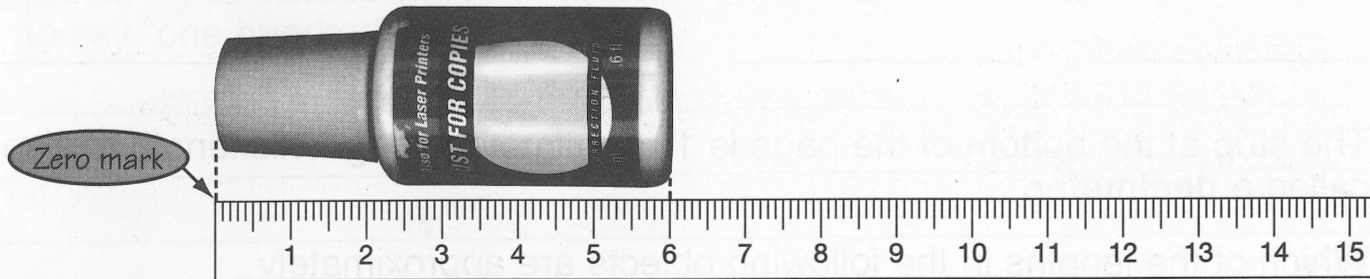
length of a swimming pool \_\_\_\_\_

# Measuring in Centimeters



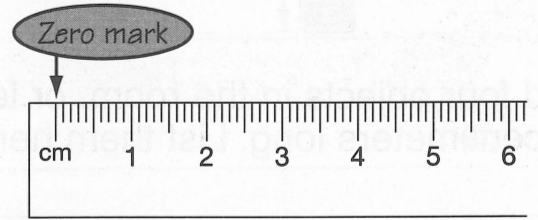
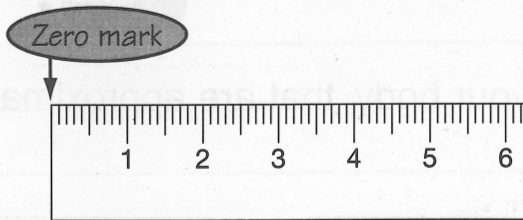
How many centimeters long is the picture of the pen? \_\_\_\_\_ centimeters

To measure an object, line up the **zero mark** on the ruler so that it is even with one end of the object.

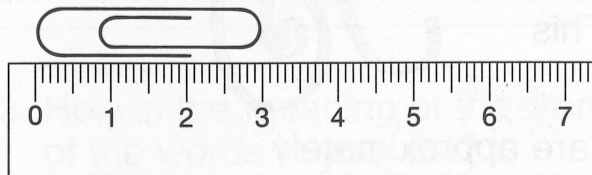


The bottle is 6 centimeters long.

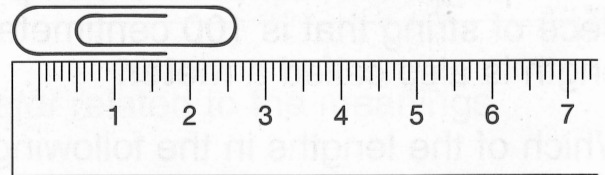
Sometimes the zero mark is at the end of the ruler, sometimes not.



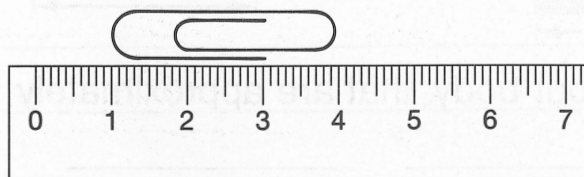
Which rulers are lined up correctly to the paper clip?



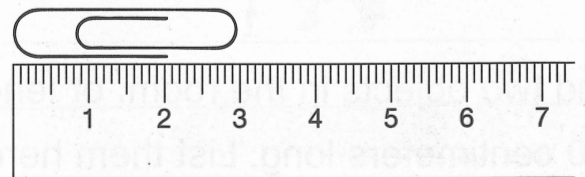
correctly     incorrectly



correctly     incorrectly



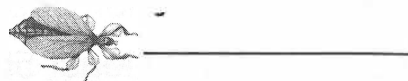
correctly     incorrectly



correctly     incorrectly

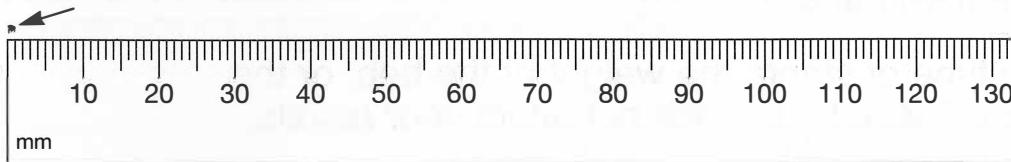
# Meet the Millimeter

Measure the lengths of the two bugs pictured below. Measure to the nearest centimeter:



Both of your measurements were probably the same, but the bugs are different lengths! If you want to measure more precisely, you can use a smaller unit called a **millimeter**. You can write millimeter as mm.

This ruler shows millimeters. The flea is about 1 millimeter long.



Which of the following objects is about 1 millimeter long? Write “yes” or “no” on each blank.

\_\_\_\_\_ distance across the head of a pin

\_\_\_\_\_ length of the eraser at the end of a pencil

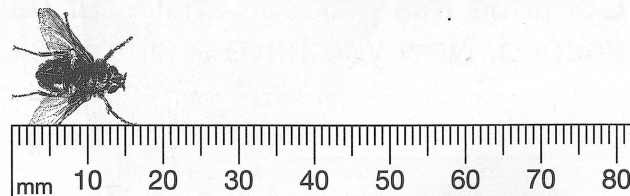
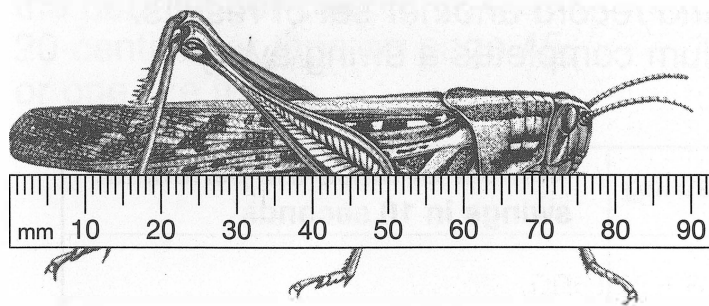
\_\_\_\_\_ length of a bumblebee

\_\_\_\_\_ thickness of a paper clip

Cut out the 20-centimeter tape #2 on page 45. Measure and record the length of each picture below in millimeters. Don't forget the antennae.

Locust \_\_\_\_\_

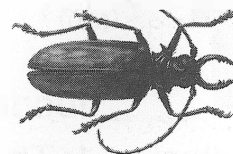
Housefly \_\_\_\_\_



Moving leaf bug



Beetle



Flea



Wood ant

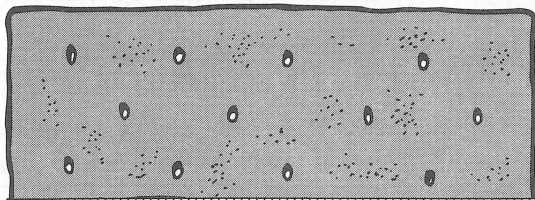
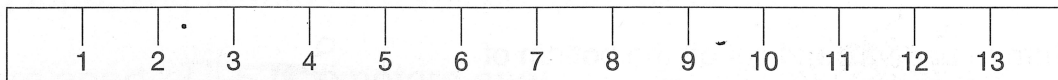


I remembered to write “millimeter,” “millimeters,” or “mm” with each answer.  Yes  No

# Centimeters and Millimeters

The top ruler shows centimeters and the bottom one shows millimeters.

This ruler shows centimeters.



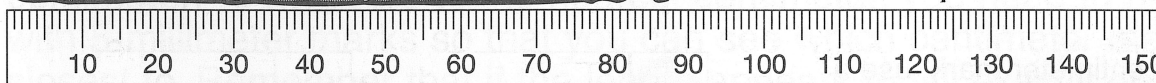
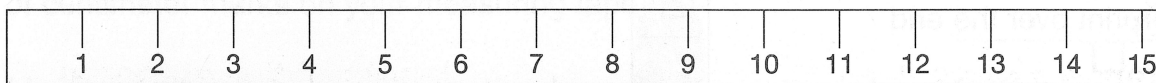
This ruler shows millimeters.



Fill in each blank.

The cracker above is \_\_\_\_\_ centimeters long.

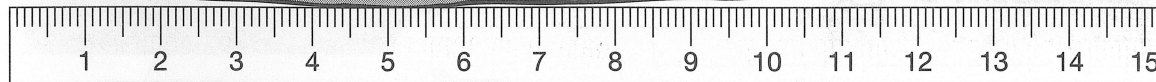
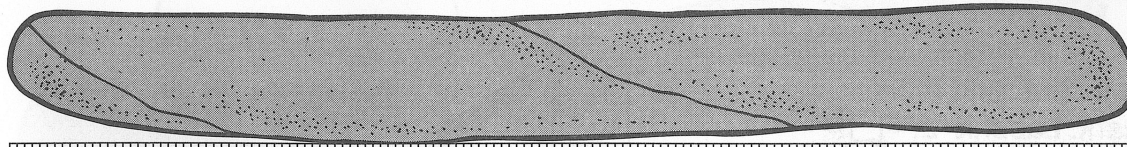
The cracker above is \_\_\_\_\_ millimeters long.



The pretzel stick above is \_\_\_\_\_ centimeters long.

The pretzel stick above is \_\_\_\_\_ millimeters long.

This ruler has cm and mm. The numbered lines are the centimeters. The shorter, unmarked lines are the millimeters.



The bread stick above is \_\_\_\_\_ centimeters long.

The bread stick above is \_\_\_\_\_ millimeters long.

Fill in each blank.

\_\_\_\_\_ mm = 1 cm

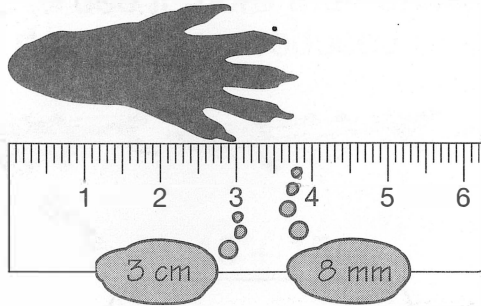
30 mm = \_\_\_\_\_ cm

\_\_\_\_\_ mm = 2 cm

\_\_\_\_\_ mm = \_\_\_\_\_ cm

# Mixed-Unit Measurements

There are many ways to measure the same length.



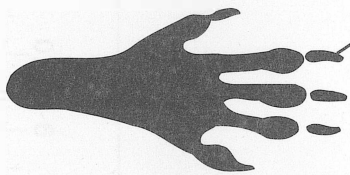
You can measure length in cm or in mm. You can also combine cm and mm in your measurement.

This pack rat footprint is 38 millimeters long.

This pack rat footprint is 3 centimeters 8 millimeters long.

Use your measuring tape to measure the length of each picture below. Measure the length using millimeters only, and then centimeters and millimeters together.

Red squirrel



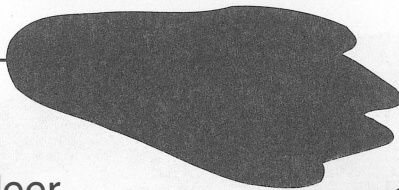
\_\_\_\_\_ mm  
 \_\_\_\_\_ cm \_\_\_\_\_ mm

Grasshopper mouse



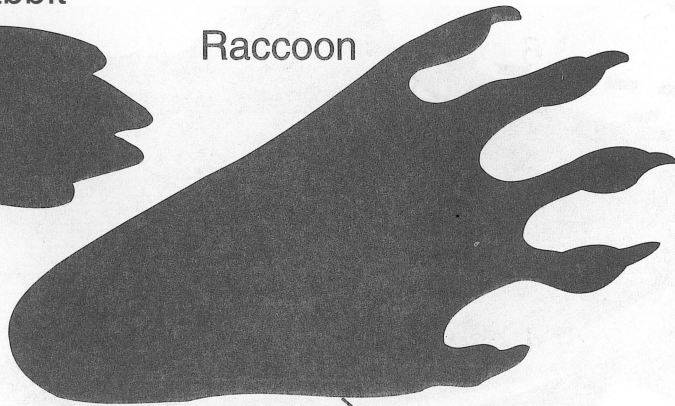
\_\_\_\_\_ mm  
 \_\_\_\_\_ cm \_\_\_\_\_ mm

Cottontail rabbit



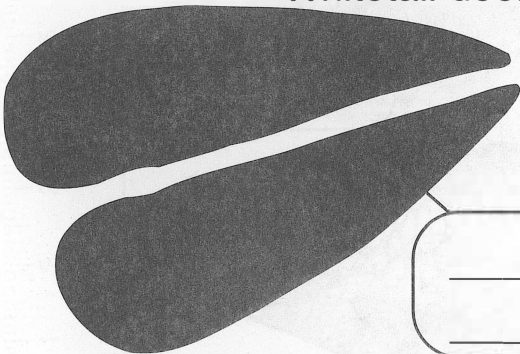
\_\_\_\_\_ mm  
 \_\_\_\_\_ cm \_\_\_\_\_ mm

Raccoon



\_\_\_\_\_ mm  
 \_\_\_\_\_ cm \_\_\_\_\_ mm

Whitetail deer

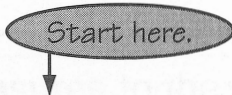
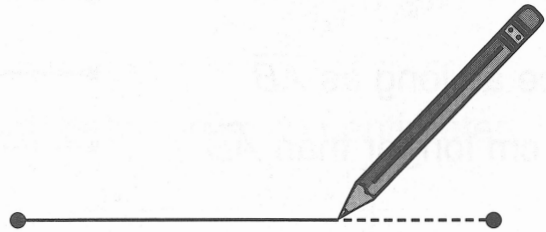
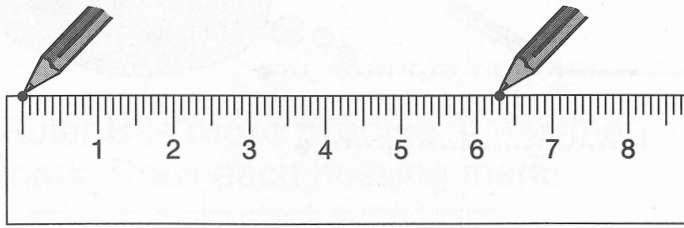


\_\_\_\_\_ mm  
 \_\_\_\_\_ cm \_\_\_\_\_ mm

If you know a measurement in millimeters, explain how to write the same measurement using a combination of centimeters and millimeters. Include a specific example in your explanation.

## Drawing Line Segments

To draw a line segment that is 6.3 centimeters long, draw a dot centered at the zero mark and one at the 6.3 mark. Then draw a line segment between the dots.



Your turn →



Draw a line segment for each length.

4.7 cm    ●-----

11.3 cm    ●-----

2.6 cm    ●-----

15.8 cm

9.4 cm

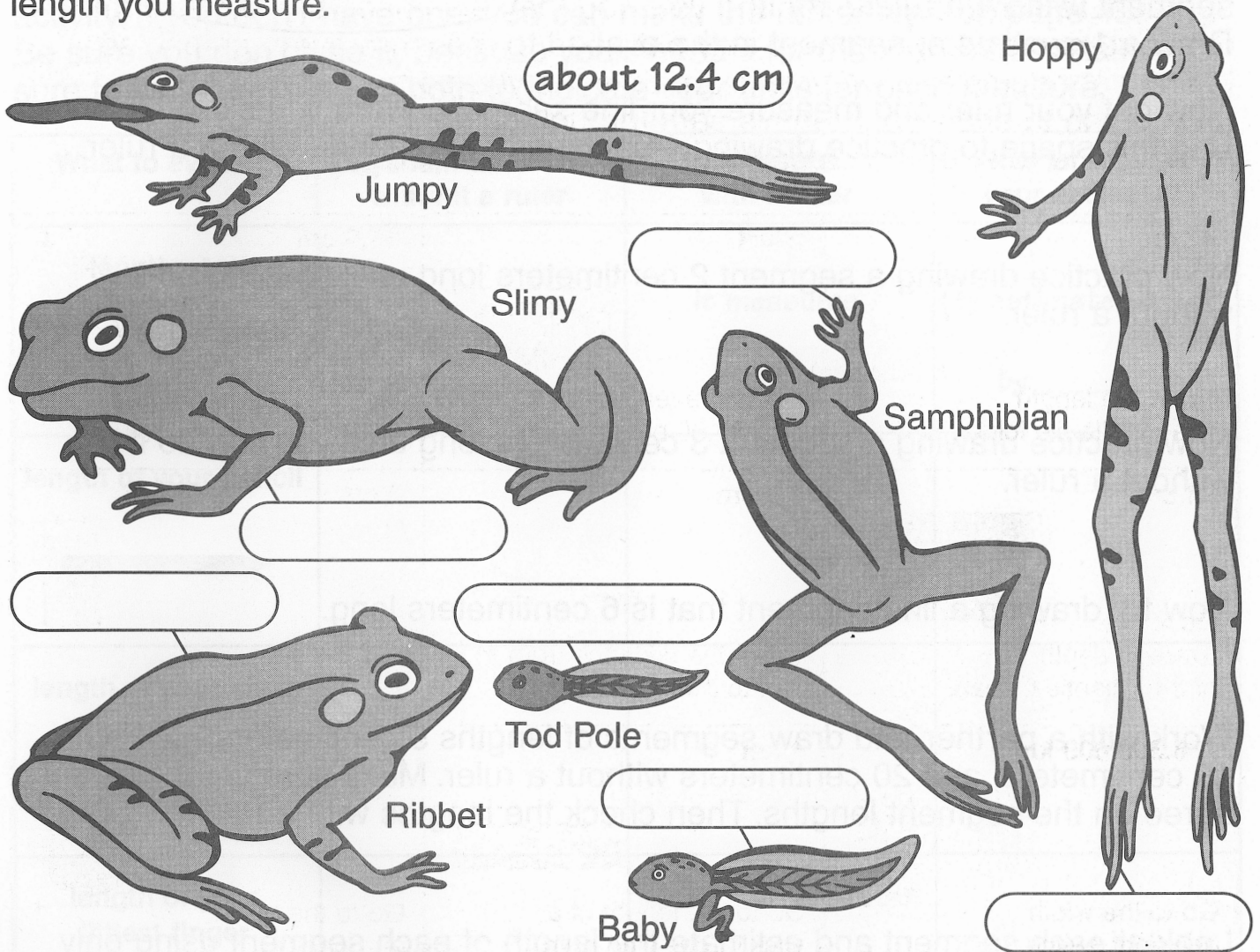
0.9 cm

17.2 cm

8.8 cm

# Frog Family

Measure the length of each frog picture to the nearest tenth of a centimeter. Always measure the longest part. This means you will write your answer as a decimal, as shown in the first example below. Make a dot at each end of the length you measure.



\_\_\_\_\_ is the shortest of the family, with a length of \_\_\_\_\_.

\_\_\_\_\_ is the longest of the family, with a length of \_\_\_\_\_.

\_\_\_\_\_ is the second shortest, with a length of \_\_\_\_\_.

Slimy is about 2.8 centimeters shorter than \_\_\_\_\_ and about three times as long as \_\_\_\_\_.

\_\_\_\_\_ and Samphibian together have about the same length as Hoppy.

Hoppy is about 3.7 centimeters longer than \_\_\_\_\_.

\_\_\_\_\_ is about 1.6 centimeters shorter than two times Baby's length.

# Changing Between Units of Length

The prefix *deci* is from *decem*, the Latin word for ten.

So 10 decimeters = 1 meter. We abbreviate decimeters using **dm**.

Complete each equation.

\_\_\_\_\_ cm = 1 m

\_\_\_\_\_ mm = 1 cm

\_\_\_\_\_ dm = 1 m

\_\_\_\_\_ mm = 1 m

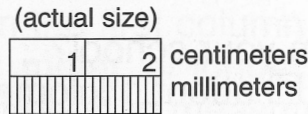
\_\_\_\_\_ cm = 1 dm

To change from centimeters to millimeters, multiply by \_\_\_\_\_.

To change from millimeters to centimeters, divide by \_\_\_\_\_.

2 cm = \_\_\_\_\_ mm

5 cm = \_\_\_\_\_ mm



60 mm = \_\_\_\_\_ cm

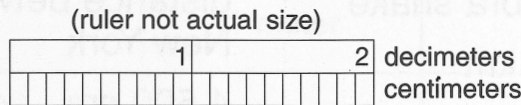
40 mm = \_\_\_\_\_ cm

To change from decimeters to centimeters, multiply by \_\_\_\_\_.

To change from centimeters to decimeters, \_\_\_\_\_ by \_\_\_\_\_.

3 dm = \_\_\_\_\_ cm

5 dm = \_\_\_\_\_ cm



320 cm = \_\_\_\_\_ dm

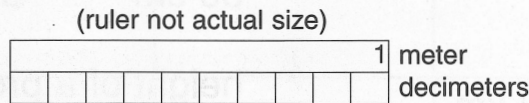
670 cm = \_\_\_\_\_ dm

To change from meters to decimeters, \_\_\_\_\_ by \_\_\_\_\_.

To change from decimeters to meters, \_\_\_\_\_ by \_\_\_\_\_.

5 m = \_\_\_\_\_ dm

12 m = \_\_\_\_\_ dm



480 dm = \_\_\_\_\_ m

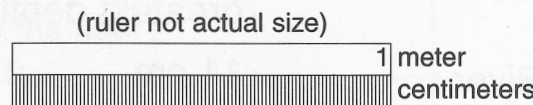
230 dm = \_\_\_\_\_ m

To change from meters to centimeters, multiply by \_\_\_\_\_.

To change from centimeters to meters, \_\_\_\_\_ by \_\_\_\_\_.

7 m = \_\_\_\_\_ cm

25 m = \_\_\_\_\_ cm



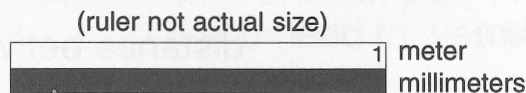
300 cm = \_\_\_\_\_ m

1,300 cm = \_\_\_\_\_ m

To change from meters to millimeters, \_\_\_\_\_ by \_\_\_\_\_.

To change from millimeters to meters, \_\_\_\_\_ by \_\_\_\_\_.

2 m = \_\_\_\_\_ mm



7,000 mm = \_\_\_\_\_ m

My millimeters are too small to see!