METRIC SYSTEM UNITS OF LENGTH

To convert units of length in the metric system of measurement

The basic unit of length in the ***metric system*** is ***the meter***. All units of length in the metric system are derived from the meter. The prefix ***"centi-"***means ***one hundredth***.

1 centimeter=1 one-hundredth of a meter

kilo-	=	1000	1 kilometer (km)	=	1000 meters (m)
hecto-	=	100	1 hectometer (hm)	=	100 m
deca-	=	10	1 decameter (dam)	=	10 m
			1 meter (m)	=	1 m
deci-	=	0.1	1 decimeter (dm)	=	0.1 m
centi-	=	0.01	1 centimeter (cm)	=	0.01 m
milli-	=	0.001	1 millimeter (mm)	=	0.001 m

Conversion between units of length in the metric system involves ***moving the decimal point to the right or to the left***. Listing the units in order from ***largest to smallest*** will indicate how many places to move the decimal point and in which direction.

Example 1: To convert **4200 cm to meters**, write the units in order from largest to smallest.

km	hm	dam	m		dm	cm	mm
		4	**2**	**.**	**0**	**0**	

Converting cm to m requires moving **2 positions to the left**.

Move the decimal point the same number of places and in the same direction (to the left).

So 4200 cm = 42.00 m

A metric measurement involving ***two units is customarily written in terms of one unit***. Convert the smaller unit to the larger unit and then add.

Example 2: To convert **8 km 32 m to kilometers**

First convert 32 m to kilometers.

km	hm	dam	m		dm	cm	mm
			0	**.**	**0**	**3**	**2**

Converting m to km requires moving **2 positions to the left.**

32 = 0.032 km

Move the decimal point the same number of places and in the same direction.

So 8 km 32 m = 8 km + 0.032 km

Add the result to 8 km

= 8.032 km

To solve application problems

Example 3: **A piece** measuring **142 cm is cut from a board 4.20 m long**. Find the length of the remaining piece.

Strategy

To find the length of the remaining piece:

Convert the length of the piece cut (142 cm) in meters.

km	hm	dam	m	dm	cm	mm
			1	**.** **4**	**2**	

Solution

142 cm = 1.42 m

4.20 m + 142 cm = 4.20 m + 1.42 m

= 2.78 m

The length of the piece remaining is 2.78 m