

Metric Conversion B Practice Problems:

Convert each of the following measurements to the required measurement.

1. 4.5 km to cm
2. 6.0 ml to hL
3. 3.5 cg to μg (micrograms)
4. 8.5 kg to pg (picograms)
5. 50 dag to dg
6. 100 dg to hg
7. 1.5 μg (micrograms) to kg
8. 2.0 pm (picometers) to hm
9. 452 dm (decimeters) to mm
10. 2.0 hg to mg (hectograms)

Answers for the practice problems follow.

Answers to the practice Problems

Table # 1 C Metric Conversion Table For Length

<u>Number of Meters</u> in each unit			1 Unit	<u>Number of units</u> in each meter					
1000 m	100 m	10 m	1 m	10 dm	100 cm	1000 mm	$10^6 \mu\text{m}$	10^9 nm	10^{12} pm
1 km	1 hm	1 dam	1 m	1 m	1 m	1 m	1 m	1 m	1 m

$$1. \quad 4.5 \cancel{\text{km}} \times \frac{1000 \cancel{\text{m}}}{1 \cancel{\text{km}}} \times \frac{100 \text{ cm}}{1 \cancel{\text{m}}} = 450000 \text{ mm}$$

Table # 3 C Metric Conversion Table For Volume

<u>Number of Liters</u> in each unit			1 Unit	<u>Number of units</u> in each Liter					
1000 L	100 L	10 L	1 L	10 dL	100 cL	1000 mL	$10^6 \mu\text{L}$	10^9 nL	10^{12} pL
1 kL	1 hL	1 dL	1 L	1 L	1 L	1 L	1 L	1 L	1 L

$$2. \quad 6.0 \cancel{\text{mL}} \times \frac{1 \cancel{\text{L}}}{1000 \cancel{\text{mL}}} \times \frac{1 \text{ hL}}{100 \cancel{\text{L}}} = .00006 \text{ hL}$$

Table # 2 C Metric Conversion Table For Mass

<u>Number of Grams</u> in each unit			1 Unit	<u>Number of units</u> in each Gram					
1000 g	100 g	10 g	1 g	10 dg	100 cg	1000 mg	$10^6 \mu\text{g}$	10^9 ng	10^{12} pg
1 kg	1 hg	1 dag	1 g	1 g	1 g	1 g	1 g	1 g	1 g

In this problem 1 gram is equal to 10^6 micrograms. $10^6 \mu\text{g}$ is scientific notation for **1000000 μg**
(You will learn more about scientific notation in the next topic.)

$$3. \quad 3.5 \cancel{\text{cg}} \times \frac{1 \cancel{\text{g}}}{100 \cancel{\text{cg}}} \times \frac{1000000 \mu\text{g}}{1 \cancel{\text{g}}} = 350000 \mu\text{g}$$

Problems 4-10 are given without the accompanying metric conversion chart. You should already have printed this chart.

$$4. \quad 8.5 \text{ ~~kg~~} \times \frac{1000 \text{ ~~g~~}}{1 \text{ ~~kg~~}} \times \frac{1000000000000 \text{ pg}}{1 \text{ ~~g~~}} = 8500000000000000 \text{ pg}$$

$$5. \quad 50 \text{ ~~dag~~} \times \frac{10 \text{ ~~g~~}}{1 \text{ ~~dag~~}} \times \frac{10 \text{ dg}}{1 \text{ ~~g~~}} = 5000 \text{ dg}$$

$$6. \quad 100 \text{ ~~dg~~} \times \frac{1 \text{ ~~g~~}}{10 \text{ ~~dg~~}} \times \frac{1 \text{ hg}}{100 \text{ ~~g~~}} = .1 \text{ hg}$$

$$7. \quad 1.5 \text{ ~~µg~~} \times \frac{1 \text{ ~~g~~}}{1000000 \text{ ~~µg~~}} \times \frac{1 \text{ kg}}{1000 \text{ ~~g~~}} = .0000000015 \text{ kg}$$

$$8. \quad 2.0 \text{ ~~pm~~} \times \frac{1 \text{ ~~m~~}}{1000000000000 \text{ ~~pm~~}} \times \frac{1 \text{ hg}}{100 \text{ ~~m~~}} = .00000000000002 \text{ hg}$$

$$9. \quad 452 \text{ ~~dm~~} \times \frac{1 \text{ ~~m~~}}{10 \text{ ~~dm~~}} \times \frac{1000 \text{ mm}}{1 \text{ ~~m~~}} = 45200 \text{ mm}$$

$$10. \quad 2.0 \text{ ~~hg~~} \times \frac{100 \text{ ~~g~~}}{1 \text{ ~~hg~~}} \times \frac{1000 \text{ mg}}{1 \text{ ~~g~~}} = 200000 \text{ mg}$$

On the [Activities page of the Chem One Web Site](#) there are several links to other Web Sites that include explanations and examples about Dimensional Analysis and metric conversion. You may find these helpful to you understanding this topic.