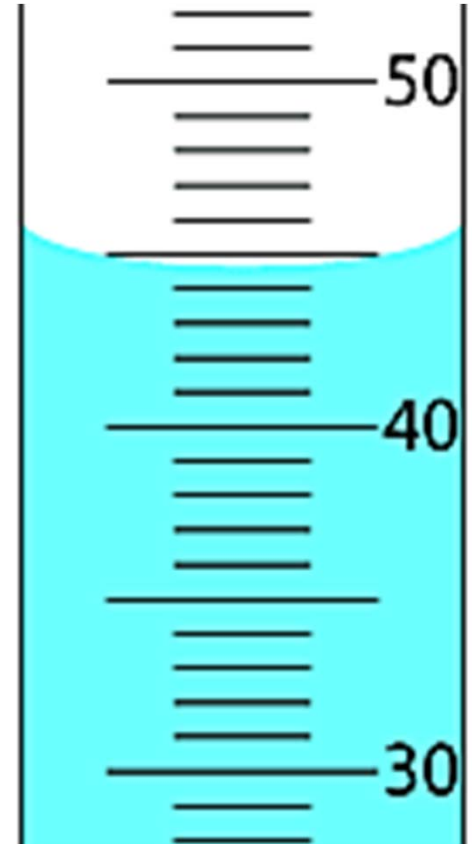
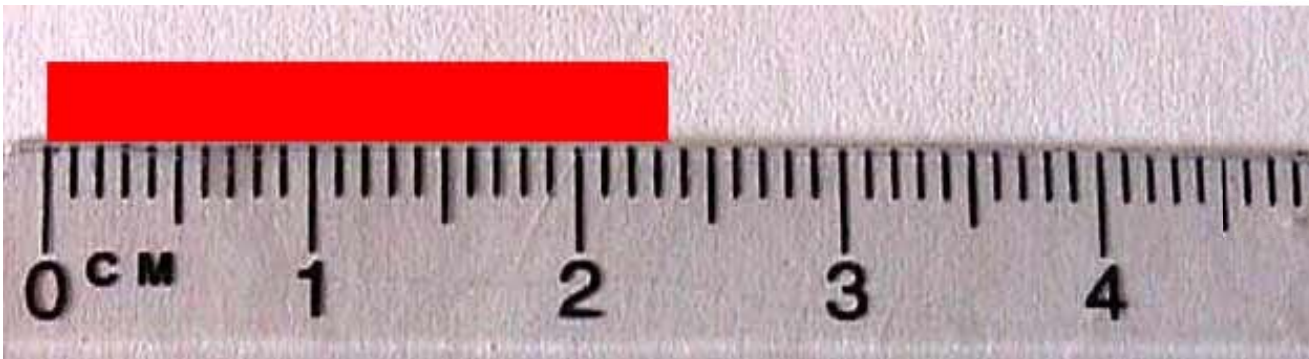


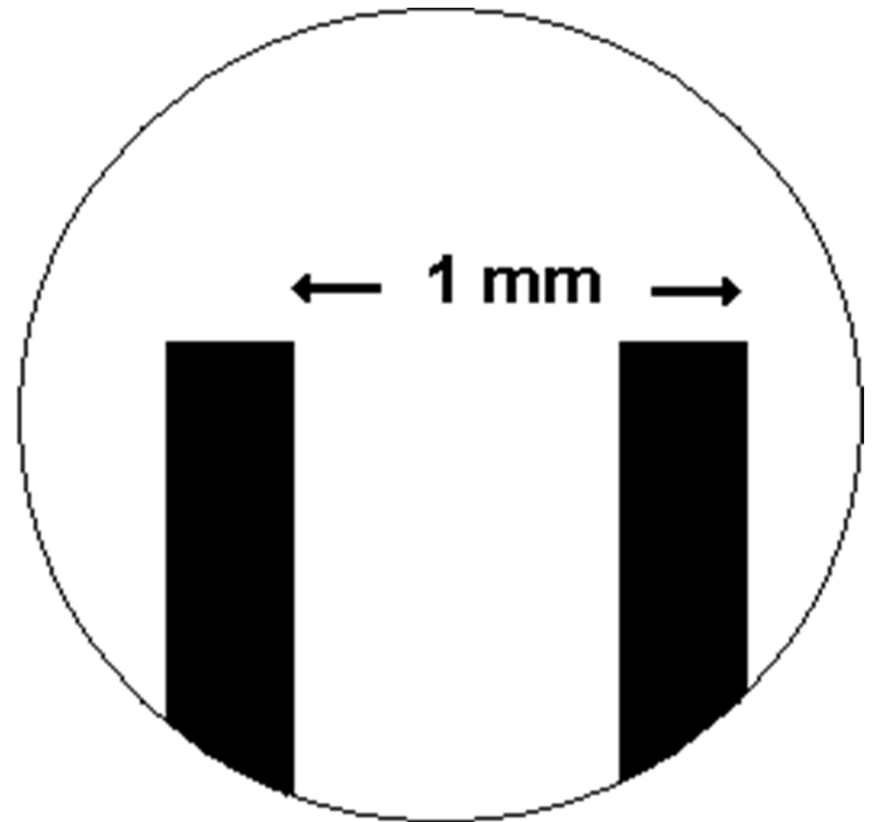
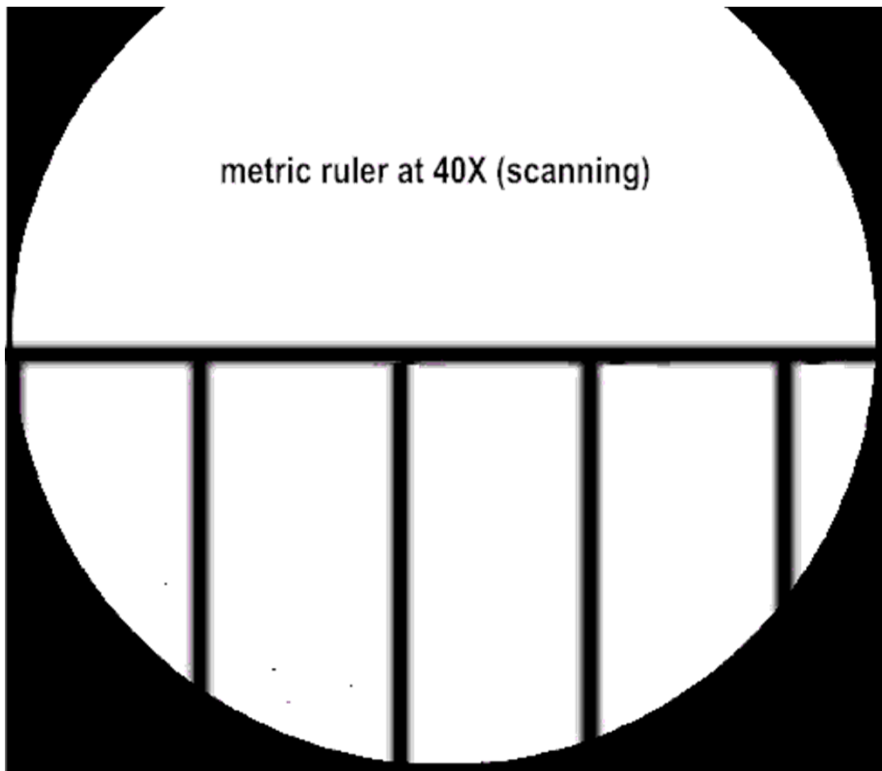
# Measurement Reminders

- Pay attention to the scale on apparatus (1s, 2s, 5s)
- Measure volume of liquid at the meniscus (lowest level)
- Note placement of specimen on ruler



# Microscopic Measurement

Note: 1mm = 1,000 micrometers ( $\mu\text{m}$ )



# Measurement Conversion

Larger

Smaller

**UNITS**

**K H D U D C M**

**Grams (g)**

**Liters (L)**

**Meters (m)**



Scientists all over the world use the same system of units so they can communicate information clearly. This system of measurement is called the **International System of Units (SI)**. Metric measurement is based on the number ten and makes calculations with the system relatively easy. By using the following conversion chart, converting from one unit to another is done simply by moving the decimal point:

Kilo-      Hecto-      Deca-      UNIT      deci-      centi-      milli-

The blank line in the middle of the conversion chart can change depending on what we are measuring:

The unit for length is the meter (m).

The unit for mass is the gram (g).

The unit for volume is the liter (L).

**NOTE:**

**Density = Mass / Volume**

## Part A - Answers

### PART A

*What type of measurement is indicated by each of the following units? Choices are in the last column.*

10. g/mL density

13. g mass

16. mg mass

density

11. s time

14. cm<sup>3</sup> volume

17. L volume

length

12. km length

15. mm length

18. g/cm<sup>3</sup> density

mass

time

volume

## PART B

# Part B - Answers

*For each of the following commonly used measurements, indicate its symbol. Use the symbols to complete the following sentences with the most appropriate unit. Units may be used more than once or not at all.*

mL milliliter

mg milligram

km kilometer

cm centimeter

kg kilogram

mm millimeter

s second

g gram

m meter

L liter

1. Colas may be purchased in two or three liter bottles.
2. The mass of a bowling ball is 7.25 kg.
3. The length of the common housefly is about 1 cm.
4. The mass of a paperclip is about 1 mg.
5. One teaspoon of cough syrup has a volume of 5 mL.
6. Stand with your arms raised out to your side. The distance from your nose to your outstretched fingers is about 1 m.
7. On a statistical basis, smoking a single cigarette lowers your life expectancy by 642,000 ms or 10.7 minutes.

## Part C - Answers

### PART C

*Convert the following metric measurements:*

$$1000 \text{ mg} = \underline{1} \text{ g}$$

$$160 \text{ cm} = \underline{1,600} \text{ mm}$$

$$109 \text{ g} = \underline{0.109} \text{ Kg}$$

$$250 \text{ m} = \underline{0.250} \text{ Km}$$

$$14 \text{ Km} = \underline{14,000} \text{ m}$$

$$1 \text{ L} = \underline{1,000} \text{ mL}$$

$$480 \text{ cm} = \underline{4.8} \text{ m}$$

$$27 \text{ g} = \underline{0.027} \text{ kg}$$

$$198\text{g} = \underline{0.198} \text{ Kg}$$

$$75\text{mL} = \underline{0.075} \text{ L}$$

$$50 \text{ cm} = \underline{0.50} \text{ m}$$

$$5 \text{ L} = \underline{5,000}\text{mL}$$

$$16 \text{ cm} = \underline{160}\text{mm}$$

$$65 \text{ g} = \underline{65,000} \text{ mg}$$

$$2500 \text{ m} = \underline{2.5} \text{ Km}$$

$$355 \text{ mL} = \underline{0.355} \text{ L}$$

$$8 \text{ mm} = \underline{0.8} \text{ cm}$$

$$6.3 \text{ cm} = \underline{63} \text{ mm}$$

$$5.6 \text{ m} = \underline{560} \text{ cm}$$

$$26,000 \text{ cm} = \underline{260} \text{ m}$$

$$56,500 \text{ mm} = \underline{0.0565} \text{ Km}$$

$$27.5 \text{ mg} = \underline{0.0275} \text{ g}$$

$$923 \text{ cm} = \underline{9.23} \text{ m}$$

$$0.025 \text{ Km} = \underline{2,500} \text{ cm}$$