

Date _____ Name _____
Section _____ Team _____
Instructor _____

Pre-Lab Study Questions | 1

1. What are the standard units of length, mass, volume, and temperature in the metric system?

Length – meter

Mass – gram

Volume – liter

Temperature – degrees Celsius (Kelvin)

2. Why is the metric (SI) system called a decimal system of measurement?

The ‘deci’ prefix means 10. Measurements in the metric system are based on factors of 10.

3. What is the purpose of using prefixes in the metric system?

Prefixes are attached to the standard unit to provide larger and smaller measurements

4. Fill in the blank lines below with the unit name, abbreviation, and property measured.

Unit Name	Abbreviation	Property Measured
liter	L	volume
centimeter	cm	length
kilometer	km	length
milligram	mg	mass

5. Identify each of the following as a measured number or an exact number:

5 books	Exact (counted)	9.25 L	Measured
0.035 kg	Measured	100 cm in 1 m	Exact (definition)
12 beakers	Exact (counted)	59.067 g	Measured
1000 mL = 1 L	Exact (definition)	8.03 mL	Measured

Date _____ Name _____
Section _____ Team _____
Instructor _____

REPORT SHEET | LAB
Chemistry and Measurement | **1**

A. Measuring Length

1. What units are represented by the *numbers* marked on the meterstick?

centimeters

What do the small lines marked on the meterstick represent?

millimeters

Complete the following statements:

There are **100** centimeters (cm) in 1 meter (m).

There are **1,000** millimeters (mm) in 1 meter (m).

There are **10** millimeters (mm) in 1 centimeter (cm).

Item	2. Length	3. Estimated Digit	4. Number of Significant Figures
Width of little fingernail	0.82 cm	0.02	2
Distance around wrist	21.45 cm	0.05	4
Length of your shoe	26.34 cm	0.04	4

5. Length of line _____

Your measurement **13.74 cm**

Other students' values **13.72 cm** **13.77 cm**

How does your value of the line length compare to those of other students?

My line is 0.02 cm longer than one, yet 0.03 cm shorter than the other.

Questions and Problems

Q1 What digits in the measurements for the line by other students are the same as yours and which are different?

Their tens, units, and tenths are the same while their hundredths differ.

B. Measuring Volume

Volume of a liquid (*include units for every measurement*)

	Cylinder 1	Cylinder 2	Cylinder 3
1. Volume (mL)	25.6 mL	482 mL	780. mL

Volume of a solid by displacement

2. Initial volume of water	20.0 mL
3. Volume of water and submerged solid	24.5 mL
4. Volume of solid (3 – 2)	4.5 mL

C. Measuring Mass

Item	1. Mass	4. Number of Significant Figures
1. Beaker	145.651 g	6
Stopper	6.534 g	4
Evaporating dish	52.168 g	5
2. Unknown #	0.567 g	3
3. Actual mass of unknown	0.565 g	3

Questions and Problems

Q2 State the number of significant figures in each of the following measurements:

4.5 m	2	204.52 g	5
0.0004 L	1	625.000 mm	6
805 lb	3	34.80 km	4

Q3 Indicate the estimated digit in each of the following measurements:

1.5 cm	0.5	4500 mi	500
0.0782 in.	0.0002	42.50 g	0.00
48.231 g	0.001	8.07 lb	0.07