

Name: _____ Date: _____ Period: _____

Measurement and conversion lab rubric

General Chem - Measurement and Conversion Lab

Objectives:

- You make measurements using the metric system and convert between units
- These measurements will encompass mastering the metric ruler, scale, and the graduated cylinder
- You will demonstrate your ability to convert the original measurements to lower and higher units by using dimensional analysis.

Materials:

• Lab paper	• graduated cylinders	• Scale
• metric stick	• coins	• Pen/pencil
• penny	• Book	• Plastic spoon
	• Small petri dish	• Small cup

Procedures and Data:

1. What is the metric or SI unit used when measuring the following?
 - a. Length _____
 - b. Mass _____
 - c. Volume _____
2. Write below the metric prefix mnemonic, SYMBOLS and NAME from largest to smallest. Below each write what it means in POWERS of 10.
3. Using a **meter stick** or ruler record the following measurements in centimeters. Remember to estimate one more digit than you can see. All measurements taken with a ruler or meter stick in centimeters should have two decimal places.
 - a. Diameter of Penny _____
 - b. Height of Lab counter _____
 - c. Width of the text book _____
 - d. Height of one person in group _____
4. Using an electronic **scale** record the **mass** of the following items.
 - a. Mass of Penny _____
 - b. Mass of Pencil or Pen _____
 - c. Mass of EMPTY graduated cylinder _____
 - d. Mass of graduated cylinder with **10.0 mL** of water _____
 - e. Mass of water (subtract c & d from above) _____
5. Using a triple beam balance record the **mass** of the following items.
 - a. Mass of Penny _____
 - b. Mass of Pencil or Pen _____
6. Using the **graduated cylinder** determine the **volume** of water that each of the following can hold. You will need to fill each item to the edge and carefully pour the liquid from the container into the graduated cylinder. All measurements taken with a graduated cylinder should have one decimal places.

Item	POINTS	Total
Procedure & Data		
1	1 each	3
2	4	4
3	1 each	2
4	1 each	5
5	1 each	2
6	1 each	3
Correct # sigfig	1 each	3
Post Lab		
1	2	2
2	2	2
3	2	2
4	4	4
5 with calculations	2 pt each	26
NEATNESS	2	2
TOTAL		60

- a. Test tube _____
- b. Small petri dish _____
- c. Small plastic cup _____

Post Lab

1. What sources of error would account for differences in measurement for the same item?

2. Using the mass and volume of water in step 4 (d & e) calculate the density of water (SHOW CALCULATION with UNITS)

3. How does the mass of the penny and pen (or pencil) compare between the two measuring devices?

4. Which device is more accurate and why

5. Complete the following conversions using the measurements from above.

Show your conversion with units on using DIMENSIONAL ANALYSIS on below each to receive full credit.

Length: (measured value MUST include unit)

a)	Diameter of Penny	Measured:	Km
CALCULATION:			
b)	Height of Lab Counter	Measured:	mm
CALCULATION:			
c)	Width of text book	Measured:	Hm
CALCULATION:			
d)	Height of one person	Measured:	mm
CALCULATION:			

Mass: (measured value MUST include unit)

e)	Mass of Penny(with electronic balance)	Measured:	Hg
CALCULATION:			
f)	Mass of pencil or pen (with electronic balance)	Measured:	mg
CALCULATION:			
g)	Mass of EMPTY graduated cylinder	Measured:	dg
CALCULATION:			
h)	Mass of 10 mL water	Measured:	Dag
CALCULATION:			

Volume: (measured value MUST include unit)

i)	Test Tube	Measured:	L
CALCULATION:			

j)	Small petri dish	Measured:	daL
CALCULATION:			
k)	Small plastic cup	Measured:	cL
CALCULATION:			

Non-Metric Conversion

l)	Time	725,900 seconds	years
CALCULATION:			
m)	Time	26.50 weeks	seconds
CALCULATION:			