

UNIT: Laboratory Equipment
MEASUREMENT SKILL PRACTICE STATIONS (2 days)

Name _____ Period _____ Date ____ / ____ / ____ *Formative Assessment*

NOTE: When finding the measurement of an object, remember to *estimate the last number* as a tenth of the way to the next mark and include a *unit of measurement!*

NAKED NUMBER ALERT!!!

To get FULL CREDIT, all number answers **MUST** have a correct unit of measurement. After all, if I asked you how much you weighed, you wouldn't tell me 115 gallons!

- temperature is in degrees Celcius ($^{\circ}\text{C}$) [also known as centigrade]
- length is in meters (m).....[May also use cm OR mm]
- solid volume is in cubic centimeters (cm^3)
- mass is in grams (g)
- liquid volume is in milliliters (ml or mL)

Station #1: **OBSERVE** the equipment set-up. The mass of the rock is _____g.
Would the mass of the rock be measured as the same if you used a different balance? Explain your reasoning. _____

Station #2: Determine the mass of the rock: _____ [Ask the Teacher to confirm you're correct!]

Station #3: **OBSERVE** the equipment set-up. The liquid volume was _____ml before the object was placed in the graduated cylinder. When the object was added, the liquid rose to _____ml. This means that the object's volume is _____ cm^3 .
Why is the object's volume given in cm^3 when the liquid was displaced/rose by an amount measured in ml? _____

Station #4: Calculate the volume of the bolt: _____ [Ask the Teacher to confirm you're correct!]

Station #5: **OBSERVE** the set-up. The block measures _____cm long by _____cm wide by _____cm high. If the volume of a regularly shaped object is its length times its width multiplied by its height, then its volume is _____ cm^3 .
*Is this measurement **absolutely correct**? Defend your opinion.* _____

Station #6: The volume of the wood block is: _____

Station #7: **OBSERVE** the equipment set-up.

The liquid volume is _____ ml in the *small* graduated cylinder.

The liquid volume is _____ ml in the *LARGE* graduated cylinder.

Describe how you know where to read the correct measurement. _____

Station #8: Fill the graduated cylinder until the liquid volume is exactly 6.5 ml.

[Ask the Teacher to confirm you're correct!]

Station #9: **OBSERVE** the set-up. The temperature of the ICE WATER in the beaker is _____ °C.

What do you think will happen to the temperature of the water once the last ice cube has melted?

Explain your idea. _____

Station #10: The temperature of the water in the Erlenmeyer flask is: _____

Station #11: **OBSERVE** the equipment set-up. The length of the magazine is _____ cm.

Why is the ruler NOT set up to start the measurement at zero? _____

Station #12: Measure the length of the half-meter stick using the two labeled meter sticks. Record your measurements:

meter stick #1: _____ meter stick #2: _____

Reminder: Did you include a correct unit of measurement? ☺

Explain why the two measurements are not the same. _____

When you are confident that you “know your stuff” about how to measure accurately, then approach the renowned Master of Science, aka “Teacher” [no genuflecting necessary] and petition to prove your Mastery of Measurement.

COMPLETING THE MASTERY EXAM WITH A 100% CORRECT SCORE IS MANDATORY.

EQUIPMENT LIST

ALL STATIONS: laminated station number signs taped to counter
laminated *Lab Equipment How-To Checklist* handouts

STATIONS #1, 3, 5, 7, 9, and 11 need signs that state OBSERVE ONLY taped to counter

STATION #1: triple-beam balance,
rock

STATION #2: triple-beam balance
rock

STATION #3: 100 ml graduated cylinder
large metal object
To Set Up: water, pipette

STATION #4: 10 ml graduated cylinder
water in beaker
pipette
metal bolt

STATION #5: wooden block whose three dimensions are marked on the block in pen

STATION #6: wood block (different size than that used for Station #5)
metric ruler

STATION #7: 10 ml graduated cylinder
100 ml graduated cylinder
To Set Up: water, pipette

STATION #8: 10 ml graduated cylinder
water in beaker
pipette

STATION #9: ice cubes in water
beaker
thermometer
stir stick

STATION #11: magazine
ruler taped to magazine

STATION #10: Erlenmeyer flask
water at room temperature
thermometer
stir stick

STATION #12: half-meter stick
2 meter sticks, different makes