

Name: \_\_\_\_\_ Section: \_\_\_\_\_

## A Mini-Course in Measurements

A new company that specializes in units and measurements has moved into your community and they are currently looking to hire teams of individuals. The duties of the hired individuals would be to perform a wide variety of measurements, including (but not limited to) mass, volume, and length/distance measurements. Additionally, the company expects all applicants to have exceptional skills when it comes to handling the necessary equipment for performing measurements.

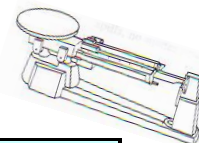
You and a select group of classmates have decided to apply for the openings, but have realized the need to develop the measurement skills required for the job. Understanding how the best candidates must be able to show their skills, I have been hired to train and select the most qualified individuals. Therefore, this mini-course was created to assist the groups of applicants as they compete for the available positions. As you progress through this mini-course you will:

1. Use your inquiry skills to try and figure out the various types of equipment and how to measure things with them
2. Learn about the important information and the detailed steps necessary to successfully use each type of equipment to measure objects
3. Practice using the equipment and making measurements on various objects
4. Take the assessment that will determine how qualified you are for the position - the most qualified group of individuals will have the highest average assessment score and will be recommended for the available positions.

**Since a portion of this mini-course will allow groups to work independently, it is important that all activities are completed with the utmost effort and focus.**

## Part 1 - Inquiry

Directions: Working with your group, see if you can figure out how to use the equipment at the various stations around the classroom. Considering how this may be your first time using the different types of equipment, it is important that you are extremely careful when handling them.



### Equipment Station - Triple Beam Balance

How do you use the equipment in order to get the necessary measurements?

Unit(s) associated with the equipment

Measurement for Object 1 - Write Name of Object Here

Measurement for Object 2 - Write Name of Object Here

### Equipment Station - Graduated Cylinder

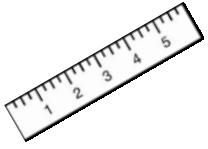
How do you use the equipment in order to get the necessary measurements?

Unit(s) associated with the equipment

Measurement for Object 1 - Write Name of Object Here

Measurement for Object 2 - Write Name of Object Here





## Equipment Station - Ruler

How do you use the equipment in order to get the necessary measurements?

Unit(s) associated with the equipment

Measurement for Object 1 - Write Name of Object Here

Measurement for Object 2 - Write Name of Object Here

## Equipment Station - Meter Stick

How do you use the equipment in order to get the necessary measurements?

Unit(s) associated with the equipment

Measurement for Object 1 - Write Name of Object Here

Measurement for Object 2 - Write Name of Object Here





### Equipment Station - Spring Scale

How do you use the equipment in order to get the necessary measurements?

Unit(s) associated with the equipment

Measurement for Object 1 - Write Name of Object Here

Measurement for Object 2 - Write Name of Object Here

### Equipment Station - Thermometer

How do you use the equipment in order to get the necessary measurements?

Unit(s) associated with the equipment

Measurement for Object 1 - Write Name of Object Here

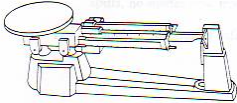


Measurement for Object 2 - Write Name of Object Here

Measurement for Object 3 - Write Name of Object Here



## Part 2 - Information Gathering

Directions: Now that you have attempted to figure out how the various types of equipment work, use the space below to write down any notes or important information pertaining to their use. A variety of resources will be provided to assist you for this part. Please use additional paper for note-taking if necessary.

Equipment	Notes
<p data-bbox="175 642 383 737">Triple Beam Balance</p> 	
<p data-bbox="183 1062 370 1157">Graduated Cylinder</p> 	
<p data-bbox="228 1482 321 1514">Ruler</p> 	

Meter Stick



Spring Scale



Thermometer



### Part 3 - Practice

Directions: At this point you have tried to figure out how to use the equipment and you have gathered some detailed information associated with each. You will now spend the remaining time practicing how to use the various types of equipment and making measurements. Your group will now rotate through the different stations around the classroom, refining your measurement skills as you go. It is important that you ask for assistance if you have questions or uncertainties when using the equipment and making the necessary measurements.

#### Measuring LENGTH (Metric)

Object	Estimate (mm)	Measured Length (mm)	Estimate (cm)	Measured Length (cm)

#### Measuring Longer LENGTHS (Metric)

Object	Estimate (meters)	Measured Length (meters)
Width of classroom		
Width of window		
Height of partner		
Length of table (desk)		
Length of 10 Floor tiles		
Height of door		

### Measuring LENGTH (US)

Object	Estimate (inches)	Measured Length (inches)

### Measuring Irregular VOLUME

Object	Estimate (mL)	Initial Volume Reading (mL w/out object)	Final Volume Reading (mL w/object)	Measured Volume (mL) <i>Final minus Initial</i>

### Measuring (& Calculating) Regular VOLUME

*(length x width x height)*

Object	Estimate (cm <sup>3</sup> )	Measured Volume (cm <sup>3</sup> )



### Measuring MASS

Object	Estimate (grams)	Measured Mass (grams)

### Measuring Weight

Object	Estimate (newtons)	Measured Weight (newtons)

### Measuring TEMPERATURE

Object	Estimate (°C)	Measured Temperature (°C)	Estimate (°F)	Measured Temperature (°F)

The information sheet at this station provides you with a visual of the Celsius and Fahrenheit temperature scales. Additionally, you will notice a third scale known as the Kelvin scale. Compare the three different scales and explain what makes the Kelvin scale so different from the other two.