

# 3 Measurement in the Lab

January 30, 2019 9:05 PM



## Science 9 Measurement in the Lab

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

Date: \_\_\_\_\_

Block: \_\_\_\_\_

\_\_\_\_ / 20

Throughout the course we will be collecting information (data) from measurements that we make. It is important to have an idea of how to make these measurements so today we will practice!

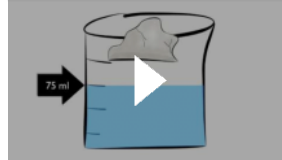
EQUIPMENT	NOTES
	<p>How to use: Line 0 zero up with object. Read left to right.</p> <p>Units used: mm, cm</p>
	<p>How to use:</p> <ul style="list-style-type: none"> <li>• read from the bottom of the <u>meniscus</u> (curve)</li> </ul> <p>Units used: mL</p>
	<p>How to use:</p> <ul style="list-style-type: none"> <li>• set to zero =&gt; wait to show 0.00g</li> <li>• when using a weigh boat =&gt; TARE</li> </ul> <p>Units used: grams (g)</p>
<p>Thermometer</p>	<p>How to use:</p> <ul style="list-style-type: none"> <li>• place in substance</li> <li>• hold still</li> <li>• do not touch sides or bottom</li> </ul> <p>Units used: °C</p>



[How to Read a Graduated Cylinder](#)



### Measuring the Volume of Solid Objects

Let's figure out how to measure the volume of a regularly shaped object and an irregularly shaped object.



REGULAR SHAPE	IRREGULAR SHAPE
 <p>Volume = Length <math>\times</math> width <math>\times</math> height</p> <p>cm <math>\rightarrow</math></p> <p>Volume = <math>\text{cm}^3</math></p> <p><math>\text{cm} \times \text{cm} \times \text{cm} = \text{cm}^3</math></p>	 <ul style="list-style-type: none"> <li>• Fill a measuring cylinder with water</li> <li>• Place the object inside</li> <li>• measure the amount the water rises</li> </ul> <p><math>\rightarrow</math> Displacement</p>

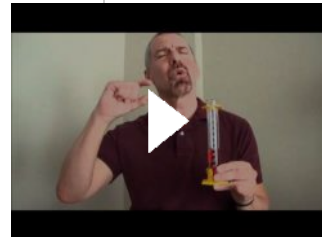
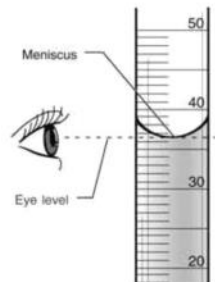
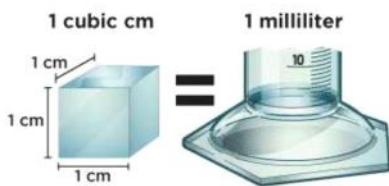
### Measuring the Volume Liquids

When reading and recording L \_\_\_\_\_ measurements, we will be using a g \_\_\_\_\_ (measuring) c \_\_\_\_\_.

When doing so, we **MUST** read from the \_\_\_\_\_.

The *meniscus* is \_\_\_\_\_.

[Reading the Meniscus Song - NOW WITH CLOSED CAPTION SO YOU CAN SING ALONG! Mr. Edmonds - 9/29/11](#)



Homework Jan 31  
 \* Study Lab Equipment + function  
 \* Quiz at START of lesson tomorrow!

**Measurement Activity** - Using the equipment around the room complete the tables below:

**A. Regular Shaped Objects**

**Measuring Mass**

Object	Estimated mass (g)	Measured mass (g)
wooden block		
magnet		
tile		

**Measuring and Calculating Regular Volume** (length x width x height)

Object	Estimated volume (cm <sup>3</sup> )	Measured length (cm)	Measured Width (cm)	Measured Height (cm)	Volume (cm <sup>3</sup> )

**B. Irregular Shaped Objects**

**Measuring Mass**

Object	Estimated mass (g)	Measured mass (g)
rock		
nail		
wood clothes peg		

**Measure Irregular Volume**

Object	Estimated volume (mL)	Initial Volume (mL w/out object)	Final Volume (ml with object)	Actual Volume (mL <sub>final</sub> - mL <sub>initial</sub> )

### C. Measuring Temperature

Procedure:



1. Make an estimate of the temperature ( $^{\circ}\text{C}$ ) for both the tap water and the water with ice cubes and salt.
2. Using the graduated cylinder measure out 75 mL of tap water.
3. Pour the water from the graduated cylinder into a beaker.
4. Use the thermometer to measure the temperature. Be sure to grasp the thermometer from the top and hold the thermometer in the middle of the solution (see picture on the left). **DO NOT** let the thermometer touch the bottom or the side of the beaker.
5. Dump out the water in to the sink.
6. Measure out 75 mL of ice water using a graduated cylinder and pour it into the beaker.
7. Using a weigh boat, weigh out 2 g of salt and add this to your beaker.
8. Use the thermometer to measure the temperature. Be sure to grasp the thermometer from the top and hold the thermometer in the middle of the solution (see picture on the left). **DO NOT** let the thermometer touch the bottom or the side of the beaker.

### Measuring Temperature

Object	Estimated temperature ( $^{\circ}\text{C}$ )	Measured temperature ( $^{\circ}\text{C}$ )
Tap water		
Water with ice cubes and 2.0 g of salt		