

Name: _____ Date: _____ Period: _____

Microscopic Measurement Practice

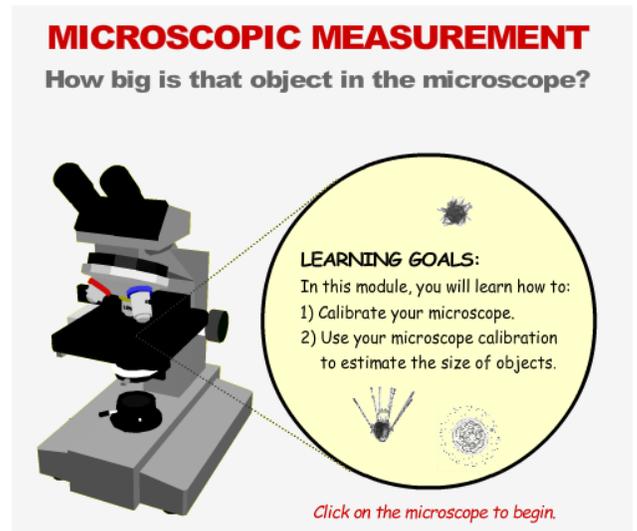
Directions: For this activity, you will require a computer, tablet or smart phone with internet access. If you do not have access to the internet through one of these resources, **please see me** privately in class and we will set up a time during the day to go to the computer lab.

STEP ONE: Go to the following website: <http://mrsmotley.weebly.com/mots-thoughts> (click VIRTUAL URCHIN HOMEWORK LINK) OR:

<http://virtualurchin.stanford.edu/microscope.htm>

When you arrive at the website, you should see this graphic on the screen.

Click on the microscope to begin the activity!



MICROSCOPIC MEASUREMENT
How big is that object in the microscope?

LEARNING GOALS:
In this module, you will learn how to:
1) Calibrate your microscope.
2) Use your microscope calibration to estimate the size of objects.

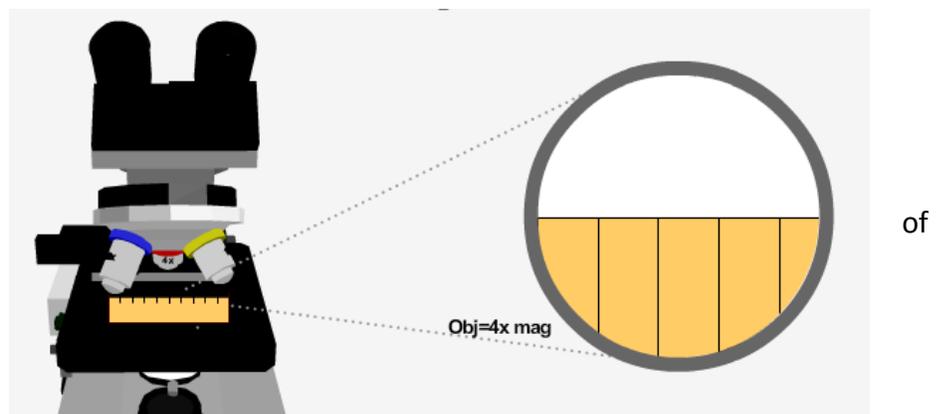
Click on the microscope to begin.

The graphic features a 3D illustration of a microscope on the left. A circular callout on the right contains the learning goals. Inside the callout, there are small icons of a microorganism, a light bulb, and a cell. A red text prompt at the bottom of the callout says 'Click on the microscope to begin.'

STEP TWO: Read each section as the tutorial guides you through each segment. In each reading, there is important information regarding what we are learning in class. On the bottom of each section, there are **three buttons**: CONCEPT - MICROSCOPE - HISTORY. Holding the cursor over each of these will give you more information too (you don't have to click them).

STEP THREE: To move on to the next section, you must click a part of the page – each section will be different. Sometimes the section will require you to click, hold, and move a part of the microscope – **other times you must answer questions!** Simply follow the step-by-step procedure and it will let you advance to the next section.

One section asks you to **CALIBRATE THE MICROSCOPE**. We will do this in class. To understand how big the object is in the microscope, we must **USE A RULER** to see how big the field view is under each objective lens.



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STEP FOUR: Learning about "FIELD OF VIEW"

When you reach the **Calibrate Your Microscope** Section, the activity asks you to drag a metric ruler on the stage of the microscope and **record how much of the ruler you can see under each objective lens**. Fill in the **Measurement (mm or millimeter)** portion of the chart below as you do on the computer. This activity helps you see the actual size of the object you are looking at.

Calibration Chart

Objective Lens	Measurement (mm)	Check
4x		
10x		
40x		

STEP FIVE:

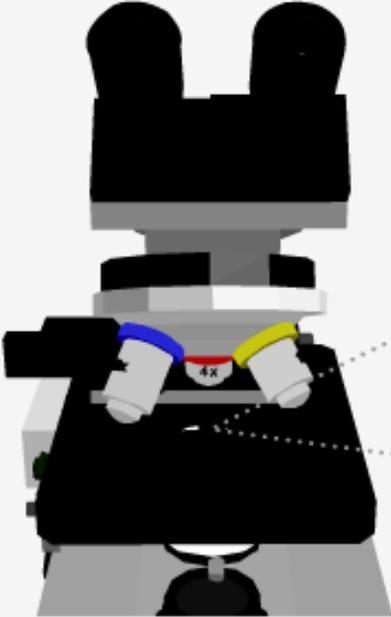
When you reach **Estimating Object Size**, you will view 5 different objects under the **most suitable objective lens**. Record (1) which objective lens is the most suitable for that specimen, and (2) record what you think the size of that specimen is (**you must use the above calibration chart for this!**).

My Measurement Estimates

Specimen	Objective Lens	Size
1) sand dollar juvenile		mm
2) sand dollar larva		mm
3) sand dollar embryo		mm
4) human hair		mm
5) blade of grass		mm

*Check your work on the next page when you finish!

Estimating Object Size



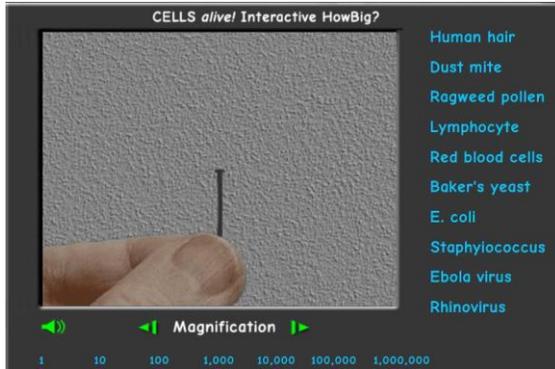
My Measurement Estimates

Specimen	Obj	Size
1 sand dollar juvenile		mm
2 sand dollar larva		mm
3 sand dollar embryo		mm
4 human hair		mm
5 blade of grass		mm

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PART 2:

1. Go to WWW.MRSMOTLEY.WEEBLY.COM
2. Clcik on Mot's Thoughts
3. Click on the second link "HOW BIG IS A..." (can also get to it by clicking: <http://www.cellsalive.com/howbig.htm>)
4. Press "Start the Animation"
5. Use the computer model to experiment with zooming in and out .
6. Keep pressing the arrow button to zoom smaller and smaller onto the Magnification Button.



A. Rank the items into order from most complex and largest in size to least complex and smallest in size:

Largest/Most complex:

Smallest/Least Complex:

B. What does this animation tell you about the size of a multi cellular organism (like a dust mite) versus a uni-cellular (1 celled organism) like a bacteria cell (e.coli or "staphylococcus" are the bacterias)?