

Looking at the Small Things

By: Nancy Volk

Name: _____

Date: _____

You will have two different experiences during this next session of study. In one location you will investigate the parts and functions of a cell. In the other location you will work with a microscope to study a specimen, making observations and approximating its size.

Activity 1: Microscope and Cell Study

Visit the following website:

<http://learn.genetics.utah.edu/content/begin/cells/insideacell/>

1. Check off the structures once you have listened to each sound bite.

_____ cell membrane _____ nucleus _____ mitochondria

_____ lysosomes and vesicles _____ Golgi apparatus _____ cytoskelton

2. What are two main differences between a plant and animal cell?
Why are the differences important?

Visit the following website and familiarize yourself with how the scale works by moving the cursor on the image and scaling up and down the list of items.

<http://learn.genetics.Utah.edu/content/begin/cells/scale>

3. List three items from different parts of the scale and their sizes.

a. _____

b. _____

c. _____

4. As the cursor moves to the right on the scale, what happens to particle size?

5. In terms of its size, what object was a surprise to you?

MOST*

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MATERIALS NEEDED

Computer lab
with two websites available

Microscope slides

Microscope grid stickers (1mm)

Student Worksheet

Students should be able to:

Measure the approximate size of an object under a microscope

Draw a quick sketch of the object viewed under the microscope

Identify parts of a cell

Explain the differences between a plant and animal cell

Name: _____

Date: _____

Activity 2: Microscope Creepy Crawlers

Station 1:

Location Number: _____ (left of microscope)

1. Take a look at the magnification value located at the left side of the eye piece.

List the magnification of the objective lens = _____

List the magnification of the eyepiece lens = _____

Total magnification for this microscope set up = (multiply the two numbers above) = _____

2. List the name of the item on your slide: _____

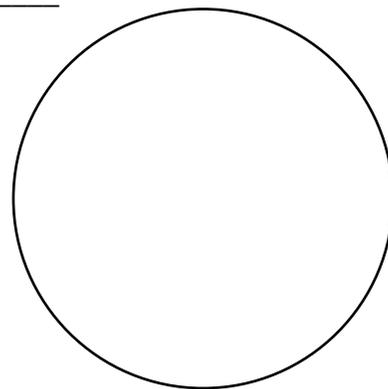
In the circle, sketch the item you see. *Use a pencil or colored pencils*

Make three observations about the specimen.

a. _____

b. _____

c. _____



3. Notice the grid that appears on your slide. Considering that every square is 1mm^2 , approximate the length of the object.

Object length = _____

Station 2:

Location Number: _____ (left of microscope)

Note: Check to be sure the magnifications of the rotating lens is 4x.

1. Take a look at the magnification value located at the left side of the eye piece.

List the magnification of the objective lens = _____

List the magnification of the eyepiece lens = _____

Total magnification for this microscope set up = (multiply the two numbers above) = _____

2. List the name of the item on your slide: _____

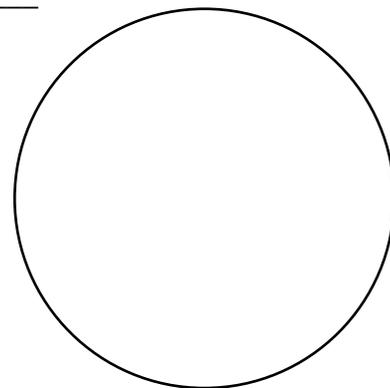
In the circle, sketch the item you see. *Use a pencil or colored pencils*

Make three observations about the specimen.

a. _____

b. _____

c. _____



3. Use the grid once more to approximate the length of the object, considering that every square is 1mm^2 .

Object length = _____

4. Change the magnification to a higher power by rotating the lens wheel in a clockwise direction.

Look at the image. What changes do you notice? _____

Has the size of the object actually changed? _____

What is the new magnification of the microscope? _____

Before leaving this station, please rotate the lenses back to the 4X magnification.

Information for the Teacher

To complete this module, you will need a set of computers or a computer lab reserved and an area for microscope work. If possible, prepare the computers with the website tabs so that the students simply need to click on the thumbnail to get to the desired location.

For the microscope activity, apply a 1mm grid sticker to the bottom of a creepy crawler prepared slide. This will be used to help the students estimate sample size.

We ordered the Creepy Crawlies slide sets from Amazon.

New York State Standards

Middle School

Standards 1: Mathematical: Key Idea 1: M1.1; Key Idea 3: M3.1a

Standard 1: Scientific Inquiry: Key Idea 1: S1.3; Key Idea 2: S2.1, S2.1a, S2.1d, S2.2a, S2.2b, S2.3, S3.1a

Standard 2: Information systems: Key Idea 1: 1.1

Standard 4: The Living Environment: Key Idea 1: 1.1, 1.1b, 1.1c, 1.1d, 1.1e, 1.1g, 1.1h

Standard 7: Key Ideas 2: 2.1 Working effectively, gathering and Processing information

General Skills: Safety skills, measuring

Living Environment Skills: Manipulate a compound microscope, classify