Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_ Block \_\_\_\_\_\_\_\_\_\_

**Practicing with the Microscope**

**LAB**

The microscope is a very helpful piece of equipment in the science lab for it helps you to see objects that are too small to be seen with the unaided eye. The microscopes that we’ll use in the science classroom are called compound microscopes.

Compound microscopes use more than one lens to magnify the size of the specimen you are viewing. The eyepiece is the lens that you look through to see the specimen. Attached to the nosepiece are three objective lenses; the scanning-power objective lens, the low-power objective lens and the high-power objective lens. The scanning-power objective is the lens used to locate and focus a specimen in. The low-power objective lens allows you to see a little bit more detail of the specimen you are viewing but not the finest details. The high-power objective lens allows you to see the finest details of the specimen.

1. **Objective Lenses**

Remove the cover from your microscope, unwrap the cord and look at the three objective lenses attached to the nosepiece of your microscope.

* + - 1. Look at the **eyepiece**.
         1. What number do you see stamped into it? \_\_\_\_\_**X**

This is the magnification of the eyepiece alone.

* + - 1. Look at the **scanning-power objective lens**.

a. What color ring does the scanning power objective lens have around it? \_\_\_\_\_\_\_

* 1. What number do you see stamped into it? \_\_\_\_\_**/.1**

1. Turn the nosepiece to get the low-power objective lens into place.
   1. What observation can you make that tells you that you have your objective lens in the correct location to be used? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Look at the **low-power objective lens**.
   * + - 1. What color ring does the low-power objective lens have around it? \_\_\_\_\_\_\_\_\_\_\_
         2. What number do you see stamped into it? \_\_\_\_\_**/.25**
3. Look at the **high-power objective lens**.
   1. What color ring does the high-power objective lens have around it? \_\_\_\_\_\_\_\_\_\_
   2. What number do you see stamped into it? \_\_\_\_\_**/.65**
4. **Total Magnification**

Total magnification is the total amount the microscope increases the size of the specimen you are looking at. To calculate the total magnification of your microscope you would multiply the magnification power of your eyepiece and the objective lens you are using (**total magnification = eyepiece X objective lens**).

* + - 1. What is the total magnification of your microscope when using the:
         1. **Scanning-power** objective lens:

\_\_\_\_\_ eyepiece X \_\_\_\_\_ scanning lens = \_\_\_\_\_ total magnification

* + - * 1. **Low-power** objective lens:

\_\_\_\_\_ eyepiece X \_\_\_\_\_ low-power lens = \_\_\_\_\_ total magnification

* + - * 1. **High-power** objective lens:

\_\_\_\_\_ eyepiece X \_\_\_\_\_ high-power lens = \_\_\_\_\_ total magnification

1. **Field of View**

The field of view is measured by the diameter of the circle of light you see when looking into the eyepiece of the microscope. As the objective lens power gets greater, the field of view gets smaller.

* + - 1. Use the ruler to determine the field of view under:
         1. **Scanning Power**: \_\_\_\_\_mm
         2. **Low Power**: \_\_\_\_\_mm
         3. **High Power**: \_\_\_\_\_mm
      2. Look at the **grid slide**.
         1. determine the field of view of each square ( ) under:

**Scanning-power**: \_\_\_\_\_ mm

**Draw what you see**:

* + - 1. Remove the grid slide and place the **letter “e”** on the stage as you would normally read it on a page.
         1. Look at the letter “e” using the scanning-power object lens.

What do you notice happened to the “e”? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* + - * 1. Move your letter “e” to the right.

What direction did your letter “e” move? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* + - 1. Place the grid slide on top of the letter “e” slide and determine its approximate size. Refer back to the information you already collected on the field of view for each square.
         1. **Scanning-power**: \_\_\_\_\_ mm

**Draw what you see**:

* + - 1. **Just for fun**!
         1. Look at the slide of different types of hair.
         2. Look at the slide of different colored fiber.