



Science 8  
**Cell Theory II**

Name:

Date:

Block:

1. Intro to Microscopes
2. Field of View
3. Microscope Safety
4. Drawing a Biological Diagram

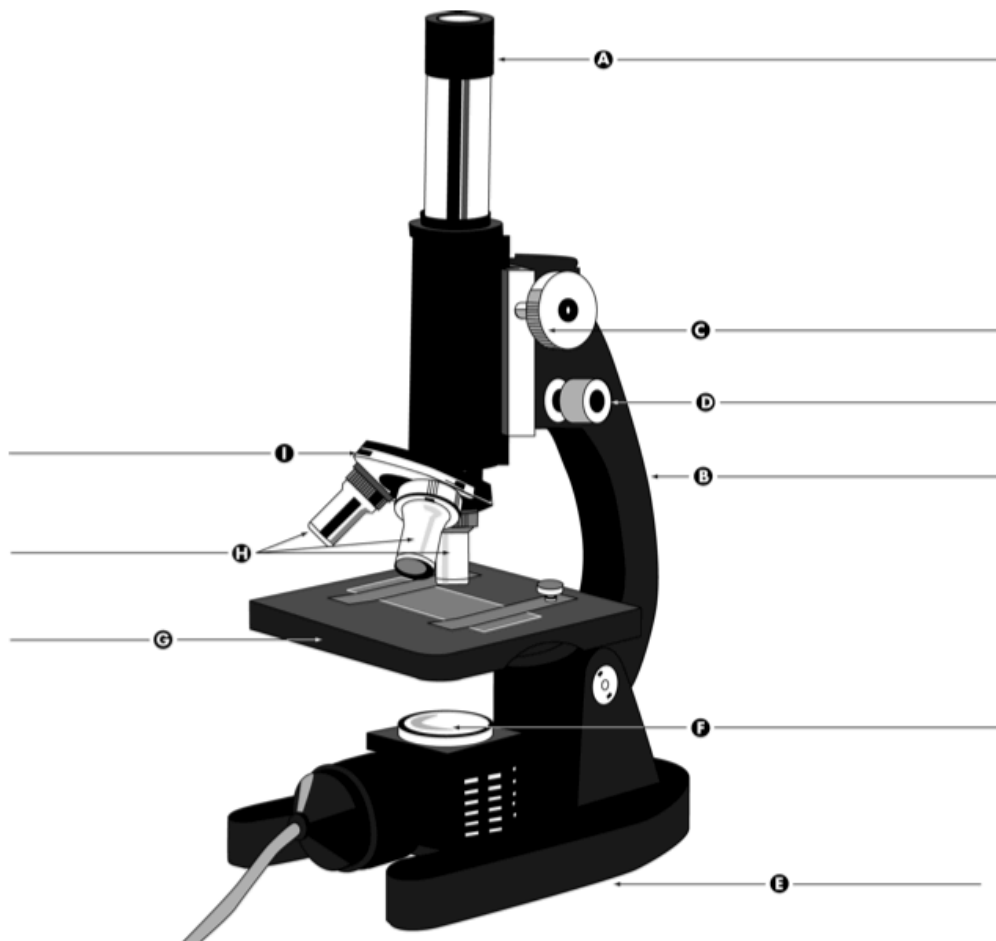
**Intro to Microscopes**

**Early Microscopes:**

- Built in the late \_\_\_\_\_ and early \_\_\_\_\_
- One of the first people to build a microscope was named \_\_\_\_\_.

**THE COMPOUND LIGHT MICROSCOPE:**

- Usually used in science classes and medical laboratories.
- **Label the parts of the microscope!**



## Parts of the Microscope

<u>Part</u>	<u>Function</u>
Eyepiece	
	Supports the eyepiece.
Coarse focus knob	
	Brings an object into focus at high power.
Objective lenses	
	Holds the three objective lenses.
Stage	
	Supplies the light needed to view the slide.
Base	

### Magnification:

- Contains two sets of lenses
- Eyepiece lens \_\_\_\_\_
- Objective lenses:
  - Low-power objective lens \_\_\_\_\_
  - Medium-power objective lens \_\_\_\_\_
  - High-power objective lens \_\_\_\_\_



**Eyepiece lens x Objective lens = Total magnification of microscope**

Example:

**Total** magnification of medium-power lens =

An eyepiece on a microscope has a magnification of  $10\times$ . The objective lenses on the microscope have magnifications of  $4\times$  at low power,  $10\times$  at medium power, and  $40\times$  at high power.

(a) Using the information how would you combine lenses on a microscope if you wanted to magnify an object  $40\times$ ?

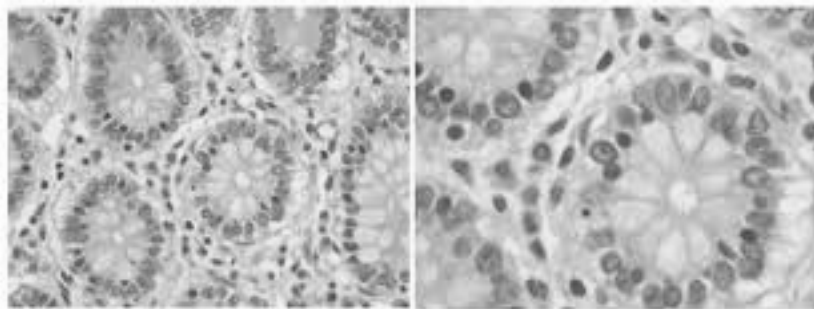
(b) How would you combine lenses if you wanted to magnify an object  $100\times$ ?

(c) How would you combine lenses if you wanted to magnify an object  $400\times$ ?

If a compound microscope has an eyepiece of  $15\times$  magnification and you select an objective lens with a power of  $40\times$ , what is the total magnification of the object?

### Field of View

- Describes how much of the specimen you will be able to see under the microscope.
- As the \_\_\_\_\_ gets greater, the FOV gets \_\_\_\_\_.
- You are “\_\_\_\_\_” to the specimen.
- You will be able to see \_\_\_\_\_ of the specimen, but the image you see will be in greater \_\_\_\_\_.



## Microscope Safety

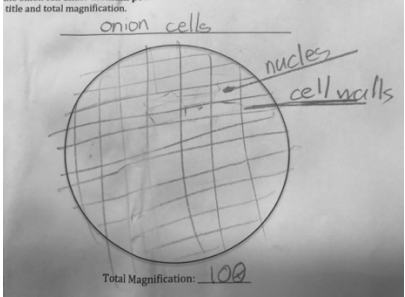
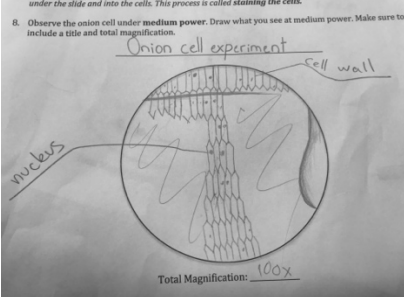
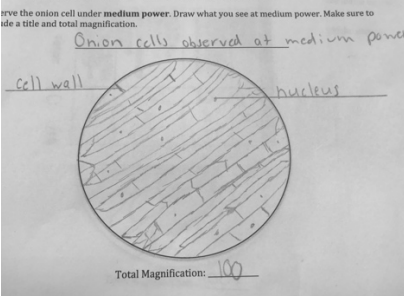
1. Always carry the microscope with \_\_\_\_ hands - one on the \_\_\_\_\_ and one underneath the \_\_\_\_\_ of the microscope.
2. Hold it up so that it does not hit tables or chairs.
3. Never swing the microscope.
4. Do not touch the \_\_\_\_\_. If they are dirty, please raise your hand and ask the teacher for the special lens paper to clean the lenses.
5. Be cautious when handling the microscope \_\_\_\_\_ and \_\_\_\_\_. Please do not handle broken glass - notify teacher.
6. If using a microscope with a \_\_\_\_\_, turn \_\_\_\_\_ the light by the switch and then unplug the microscope.
7. Use the \_\_\_\_\_ power lens first and use the \_\_\_\_\_ focus knob to focus the image. Then use the \_\_\_\_\_ power lens and use the \_\_\_\_\_ focus knob to make further adjustments.  
To further magnify the image, switch to the \_\_\_\_\_ power lens and use the \_\_\_\_\_ knob.
8. Always clean slides and microscope when finished. Store microscope set on the \_\_\_\_\_ power lens with the \_\_\_\_\_ turned down to its lowest position and furthest away from the lens (using the coarse adjustment knob).
9. Wrap the cord around the microscope safely. Cover microscope with a \_\_\_\_\_ and return microscope to storage if so requested.

## Drawing a Biological Diagram

### Rules:

1. Use a \_\_\_\_\_.
2. Make sure that a \_\_\_\_\_ is used to draw a \_\_\_\_\_ and \_\_\_\_\_ line.
3. Any words should be \_\_\_\_\_ the diagram.
4. Try to provide as much \_\_\_\_\_ in the diagram as possible.
5. Ensure that the diagram has a proper \_\_\_\_\_ and the \_\_\_\_\_ is included.

Here are some examples:

		
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### In the lab!!

1. Write the each of the following terms on a sticky note provided.

Eyepiece	Arm	Revolving nose piece	Objective lenses
Stage	Stage clips	Light source	Base

2. Label your microscope using the sticky notes.
3. Show your teacher! **Get them to initial here:** \_\_\_\_\_
4. Now you may begin the microscope activity on the following page!

# Microscope Activity!!

Step 1. Get a microscope ready.

Make sure the low power objective lens is in position.

What is your **total magnification**? \_\_\_\_\_.

Step 2. Take a slide prepared by your teacher.

Step 3. Place the slide on the stage and clip it in place with stage clips.

Look through the eyepiece to ensure that specimen is in your field of view.

Step 4. Turn the coarse focus knob to focus the image.

**Step 5. Move the slide to the left. In which direction does the specimen move?** \_\_\_\_\_.

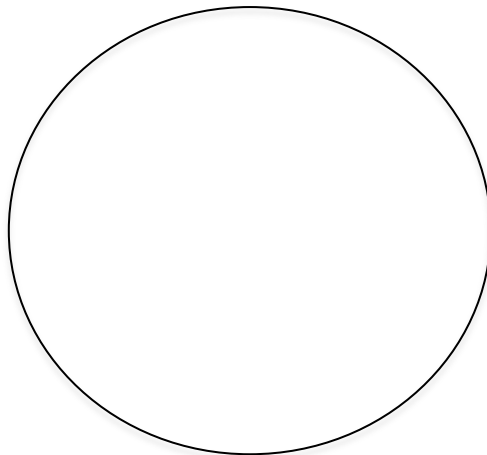
**Step 6 Move the slide away from you. In which direction does the specimen move?** \_\_\_\_\_.

Step 7. Change to medium power objective lens.

What is your **total magnification**? \_\_\_\_\_.

Step 8. Turn the coarse focus knob to further focus the image.

Step 9. Draw what you see in the space below:



Step 11. Turn off your microscope. Wrap the cord around your microscope. Before you put the microscope cover on, show your teacher! **Get them to initial here:** \_\_\_\_\_

