

# Using the Microscope

The microscope is an essential tool in the study of life science. It allows you to see things that are too small to be seen with the unaided eye. The compound microscope has more than one lens that magnifies the objects you view. Typically, the compound microscope has one lens in the eyepiece, the part you look through and it also has at least one other objective lens.

In a compound microscope the eyepiece lens usually magnifies 10 times. This is written 10X. Any object you view through this lens would appear 10 times larger than it is. The other objective lenses are called low power and high-power.

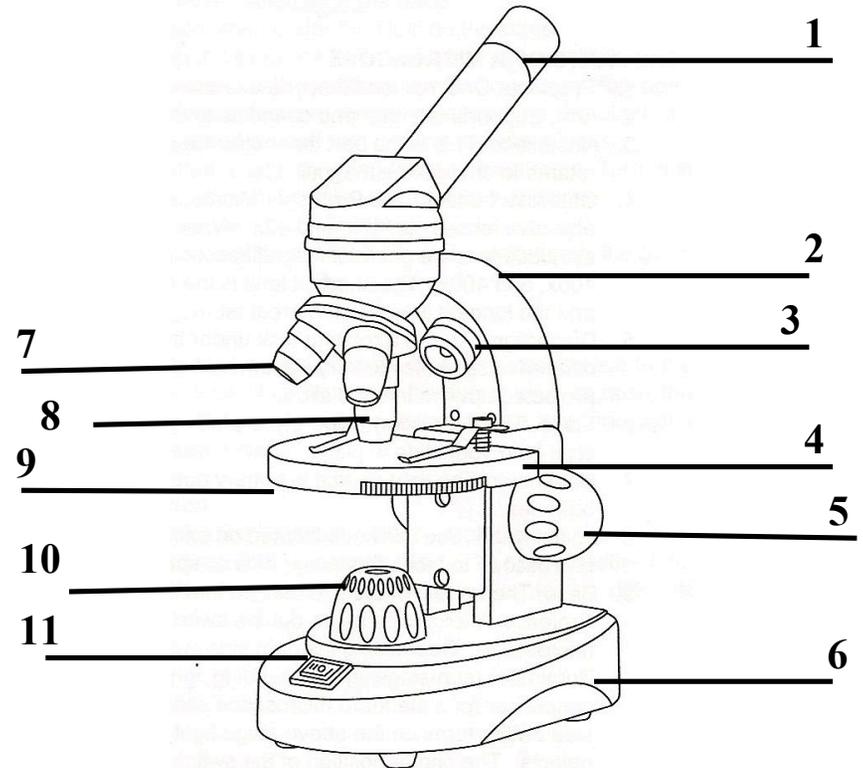
The low-power lens magnifies 4X and the high-power lens magnifies 43X. To calculate the total magnification with which you are viewing an object, multiply the magnification of the eyepiece lens by the magnification of the objective lens you are using.

## Magnification Problems

1. The eyepiece magnifies 10X and the low power magnifies 4X. What is the total magnification?  
\_\_\_\_\_
2. The eyepiece magnifies 10X and the high power magnifies 10X. What is the total magnification?  
\_\_\_\_\_

## What To Do:

1. Label the parts of the compound microscope as your teacher demonstrates them to you. Use the word bank to spell them correctly.



## WORD BANK

eyepiece	stage	power switch
arm	high power objective	
base	low power objective	
diaphragm	focus knob	
upper light	lower light	

**What To Do:**

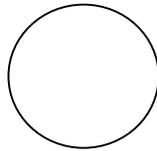
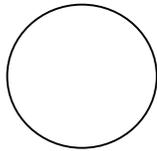
1. Your teacher will go over the procedures for using the low-power objective.
2. Highlight or underline important ideas.

**Focusing the Microscope on Low Power**

**Materials:** microscope for each side of the table, lens paper, miscellaneous slides, colored pencils

**What To Do:**

1. Set up your microscope as directed.
2. Place a slide on the stage and focus on low power.
3. Draw and color what you observe in the circles.
4. Label each image on the line and write the total magnification below it.



\_\_\_\_\_

\_\_\_\_\_

**Questions:**

1. At what magnification did you observe each slide?

\_\_\_\_\_

2. Which adjustment makes the lens move up and down?

\_\_\_\_\_

3. Which adjustment brings the image into clear focus?

\_\_\_\_\_

**What To Do:**

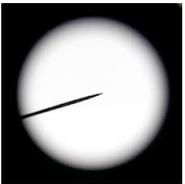
1. Your teacher will go over the procedures for using the high-power objective.
2. Highlight or underline important ideas.

**Focusing the Microscope on High Power**

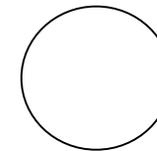
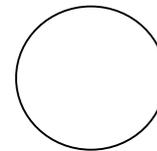
**Materials:** microscope for each side of the table, lens paper, miscellaneous slides, colored pencils

**What To Do:**

1. Set up your microscope as directed.
2. Place a slide on the stage and **focus on low power**.
3. Make sure the pointer is pointing at something you want to look at.
4. Turn the nose piece so that the high power moves into position.
5. Turn the adjustment knob slightly and bring the object into focus.
6. Draw and color what you observe in the circles.
7. Label each image on the line and write the total magnification below it.
8. Put the microscope away following procedures.



pointer



\_\_\_\_\_

\_\_\_\_\_

**Questions:**

1. At what magnification did you observe each slide?

\_\_\_\_\_

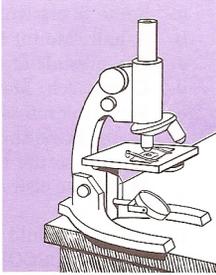
Name \_\_\_\_\_

period \_\_\_\_\_

## EXIT TICKET

Using the Microscope

1. Look at the pictures and tell what is right or what is wrong in each.



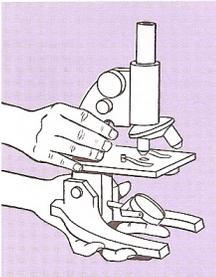

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**Cloze Paragraph:** Use the following words to fill in the blanks. (objective, eyepiece, compound, multiply)

The \_\_\_\_\_ microscope has two lenses. The lens you look through is called the \_\_\_\_\_. The low power and high power lenses are called \_\_\_\_\_ lenses. To calculate the total magnification you must \_\_\_\_\_ the eyepiece by the objective.

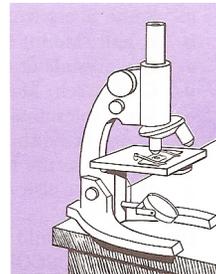
Name \_\_\_\_\_

period \_\_\_\_\_

## EXIT TICKET

Using the Microscope

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2. Look at the pictures and tell what is right or what is wrong in each.



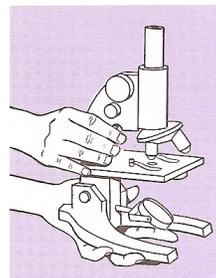

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# Procedures for the Cordless Compound Microscope

**When carrying the microscope be sure to place one hand under the base and the other on the arm.**

1. Make sure your microscope is placed about 2 inches away from the edge of the table.
2. Clean the objective and eyepiece with a small piece of lens paper - never use a paper towel.
3. The microscope has two lights – the upper light for large objects and the lower light for looking at slides.
3. Turn on the lamp by pushing the power switch. The right side of the switch controls the lower light.
4. Check to make sure the lowest power objective (4X) has been **clicked** into place. If it is not clicked into place, you won't be able to see much.
5. Place the slide on the stage over the hole and **gently** place the clips on the slide.
6. Turn the focus knob to raise the stage up until it stops.
7. While looking through the eyepiece, slowly rotate the focus knob so the stage move downward until you can see the specimen.

**When finished with the microscope:**

- A. Return the objective to low power.
- B. Take the slide off the stage.
- C. Turn off the light.
- D. Carry it correctly where your teacher tells you.

**USING THE HIGH POWER OBJECTIVE.**

11. **After** finding the object with low power you can then find it with high power.
12. Make sure what you want to see is focused on **low power**.
13. **Watch from the side** while you rotate the high power objective into place. The high power objective is longer than the low power objective and it can break the slide if you don't watch carefully.
14. **Click** the high power objective into place.
15. You may need to focus to adjust to the different magnification.

**When finished with the microscope:**

- A. Return the objective to low power.
- B. Take the slide off the stage.
- C. Turn off the light.
- D. Carry it correctly where your teacher tells you.