

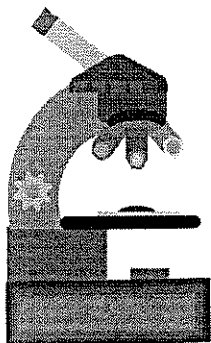
Name: \_\_\_\_\_

23pts.

Class Period: \_\_\_\_\_

Copy

Microscope #: \_\_\_\_\_



## MICROSCOPES

*How to see the small stuff!*

- Lecture Notes
- Parts of the Microscope
- Microscope Lab

### Learning Targets

How is a microscope used in scientific investigation?

Independent preparation of microscopic samples and use of compound light microscope.

Identify the magnification and properties of an object using the compound light microscope.

LECTURE NOTES: Enter the word or phrase that best completes the following statements.

When carrying any microscope, always carry it by the BASE and the ARM.

There are two types of microscopes we will be using in this classroom.

One is the COMPOUND LIGHT microscope which we will be using to see through objects (transparent). Biologists use this microscope to look into cells.

The other is the STEREOMICROSCOPE which we will be using to see the surface details of objects because you cannot see through some objects (opaque). Biologists use this type of microscope during dissections.

The first lens used in any microscope is the lens in the EYEPIECE. This lens usually magnifies the object 10 times its actual size.

The other lenses are called OBJECTIVES. The shortest one is used to find the object we wish to magnify (scanning lens). The middle lens is called the LOW - power lens. The longest lens is called the HIGH - power lens.

There are two ways to focus on an object. The first is the COURSE adjustment. This can be used while using the scanning lens only. The second is the FINE adjustment. This knob ONLY must be used when using the low and high-powered lens.

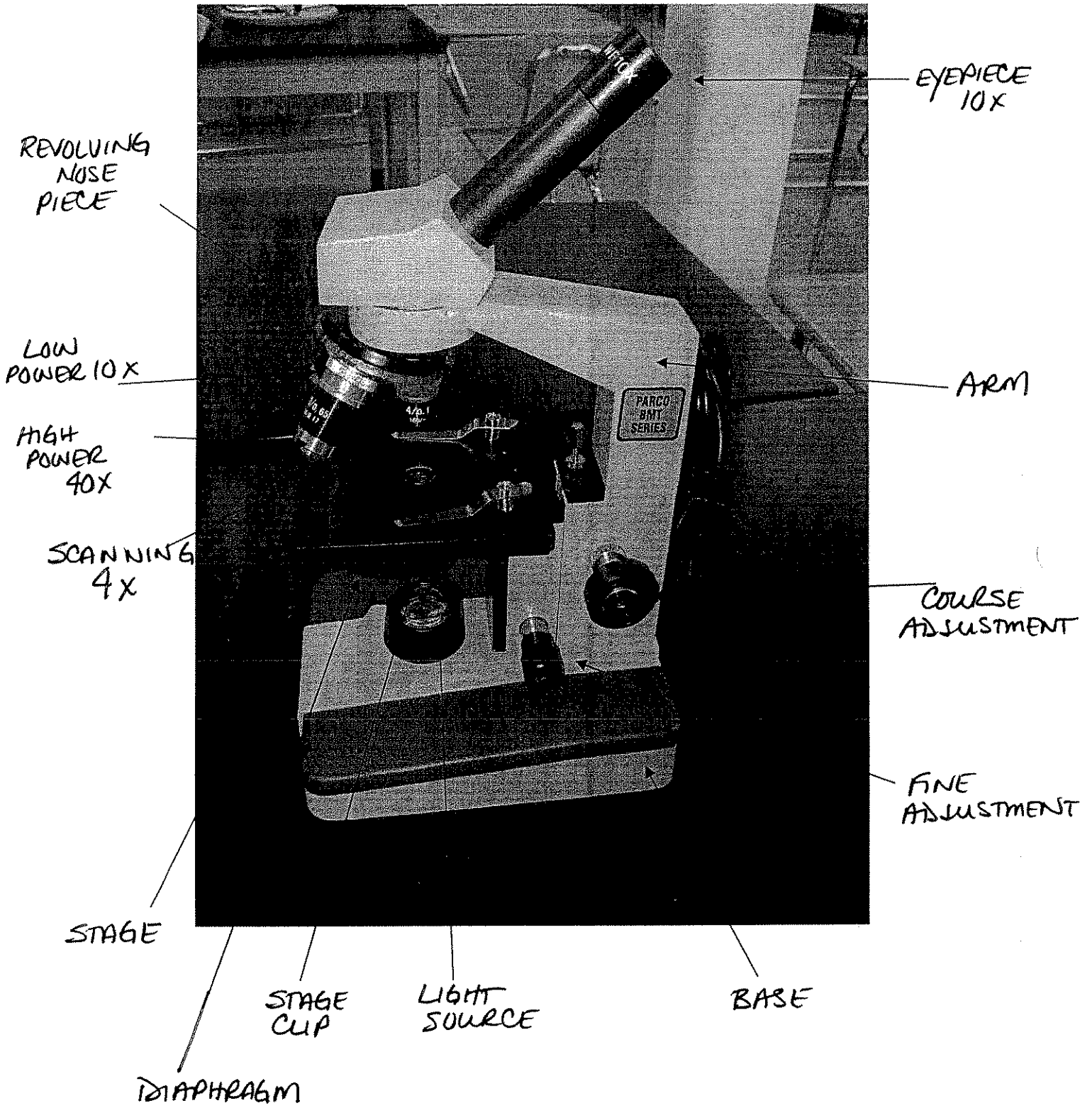
When there are no slides on the microscope, the microscope must be set on the scanning (shortest) lens and the objectives are to be moved as far away from the stage as possible.

**IT IS VERY IMPORTANT TO FOLLOW ALL DIRECTIONS CAREFULLY!  
NOT FOLLOWING DIRECTIONS CAN RESULT IN COSTLY MISTAKES!**

2pts,

# Parts of a Microscope

Label the parts of the microscope on the diagram below. Then describe the function of each part on the following page.



2pts.

## Function of the Parts of a Compound Light Microscope

Use page 1054 in your textbook to determine the function of each microscope part.

Microscope Part	Function
Eyepiece	PROVIDES 10x MAGNIFICATION
Body Tube	TRANSFERS IMAGE TO EYEPIECE
Arm	USED TO CARRY MICROSCOPE
Stage	WHERE YOU PUT YOUR SLIDES
Coarse Adjustment	FOR FOCUS ON SCANNING LENS
Fine Adjustment	FOR FOCUS ON LOW-HIGH POWER
Light Source (lamp or mirror)	SHINES LIGHT THROUGH OBJECT
Revolving Nosepiece	HOLDS OBJECTIVE LENSES
Scanning Lens	lowest power lens ( <u>shortest</u> ) used to find objects 4x
Low-Power Objective	PROVIDES 10x MAGNIFICATION
High-Power Objective	PROVIDES 40x MAGNIFICATION
Diaphragm	CONTROLS INTENSITY OF LIGHT
Base	BOTTOM OF MICROSCOPE

### Magnification

Magnification is the measure of how much larger the object appears through the microscope than it actually is. For example if you are looking at leaf using a stereomicroscope with 3x magnification, the parts of the leaf will appear 3 times larger than they actually are. Magnification can be determined by multiplying the magnification of each lens used to see the object.

$$\begin{array}{ccccccc}
 10x & & X & & 4x & = & 40x \\
 \text{magnification} & & & & \text{magnification} & & \text{total} \\
 \text{of eyepiece lens} & & & & \text{of objective lens} & & \text{magnification}
 \end{array}$$

Complete the chart below to calculate the total magnification of an object.

Eyepiece Lens	Objective Lens	Total Magnification
15x	15x	225x
10x	10x	100x
20x	40x	800x

- Which combination of lenses would allow you to see the object with greatest magnification? 20x 40x
- Which combination of lenses would allow you to see the largest area of the specimen? 10x 10x

Field of View - THE AMOUNT OF THE OBJECT THAT YOU CAN SEE

4pts.