

Glue the note worksheet on page ____ (fold a flap).

We will be filling in the answers together in class.

Name _____

Microscope Basics

1. Label the parts of the microscope on the diagram provided.

Always carry a microscope with one hand holding the _____ and one hand under the _____.

2. How do you calculate the power of magnification?
 _____ power \times _____ power

3. Calculate the powers of magnification for each objective lens.

Band Color	Objective Power	Eye-piece Power	Power

4. What happens to our view of an image as the power of magnification increases?
 We can see better _____ with _____ power of magnification, but we cannot see as much of the _____.

Body Tube
Holds the objective lenses; can be rotated to change **MAGNIFICATION**

Nosepiece
Holds the objective lenses; can be rotated to change **MAGNIFICATION**

Objectives
Lenses that range from **4X** to **40X**

Stage Clips
HOLDS the slide in place

Diaphragm
Regulates the **AMOUNT** of light

Light Source
Provides the light needed to **VIEW** the specimen

Eyepiece
Also called the **OCULAR** lens

Arm
SUPPORTS the slide being viewed

Stage
SUPPORTS the slide being viewed

Coarse Adjustment
Knobs used to **FOCUS** the view

Fine Adjustment
Knobs used to **FOCUS** the view

Base
Always carry a microscope with one hand holding the **ARM** and one hand under the **BASE**.

What's my power? #2

To calculate the power of magnification, multiply the power of the ocular lens (eyepiece) by the power of the objective.



**EYEPIECE
POWER
X
OBJECTIVE
POWER**



What are the powers of magnification for each of the objectives we have on our microscopes?

Fill in the table on your worksheet. #3

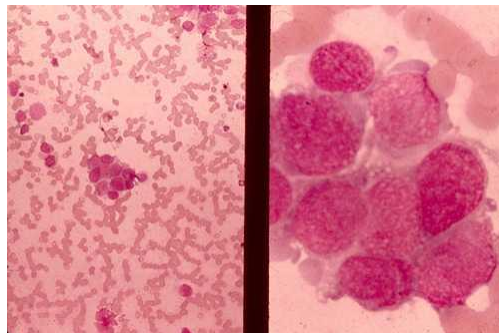
Band Color	Objective Power	Eyepiece Power	Power

Comparing Powers of Magnification #4

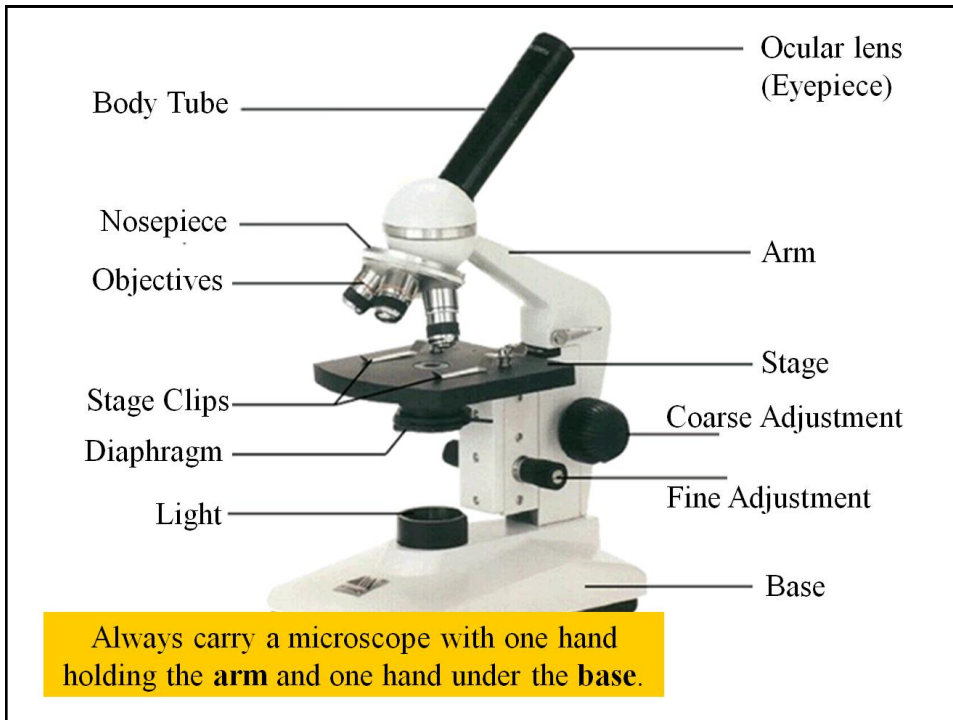


We can see better details with higher powers of magnification, but we cannot see as much of the image.

Which of these images would be viewed at a higher power of magnification?



#5 Be careful with the largest objective! Sometimes there is not enough room and you will not be able to use it!



Let's look at a few prepared slides ...

#6

You will need to view at least TWO different prepared slides to complete the table on your worksheet.

- 1st - Place the slide on the stage and center it over the opening.
- 2nd - Rotate the nosepiece so the red-banded objective is over the slide.
- 3rd - Use the adjustment knobs to bring the image into focus. You may need to move the slide so the center of the specimen lines up with the end of the black pointer.
- 4th - Once you see the image in low power, you can rotate the nosepiece to view the slide with the different objectives.
- 5th - Draw a sketch of what you see at each power - the best you can!

NOTE: If you cannot view anything at the highest power and have tried moving the slide, write a note - don't leave it blank!

Done drawing your prepared slides?

1 – You may view other prepared slides.

2 – You may study for the microscope quiz on Thursday.

3 – You may work on homework from another class or read a book.

We will start pond water samples tomorrow.

How to make a wet-mount slide ...

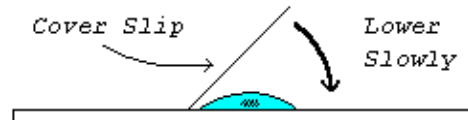
#7

1 – Get a clean slide and coverslip from your teacher.

2 – Place ONE drop of water in the middle of the slide. Don't use too much or the water will run off the edge and make a mess!

3 – Place the edge of the cover slip on one side of the water drop.

4 - Slowly lower the cover slip on top of the drop.




5 – Place the slide on the stage and view it first with the red-banded objective.

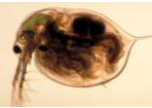
6 - Once you see the image, you can rotate the nosepiece to view the slide with the different objectives.

You do not need to use the stage clips when viewing wet-mount slides!


Pond Water Organisms




Seed Shrimp
(Ostracod)



Water Flea





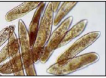











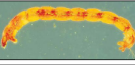



Nematodes



Rotifers (Watch for "currents")
Dragonfly Nymph

Use the picture guides or a Pond Water book to help you identify the critters you see!

What critters do you see?

 Water Flea <i>Daphnia</i> feed on bacteria & small algae, common in freshwater ponds.	 Rotifer Small organisms that usually have cilia to help them take in food or excrete wastes.	 Paramecium Have tiny cilia to help them move and take in food.	 Flatworm Usually larger than paramecium and has eyespots.	 Scud Small crustaceans with seven pairs of legs, omnivores.
 Ameba Small organisms that use pseudopods to help them move and may be used to capture prey.	 Stonefly Nymph Has two tails (caudal), each leg has two claws that are used to help it move.	 Mayfly Nymph Has three long tails (caudal), great source of food for fish.	 Nematode (Roundworm) Have an "S" shape and can be very active.	 Hydra A relative of jellyfish; has stinging cells to capture and paralyze prey.
 Damselfly Nymph Has a slender body with three tails and two large eyes.	 Dragonfly Nymph Short, chunky bodies with six legs located near its head.	 Mosquito Larva May look like hairy maggots with siphons called ventilators since they twist and squirm near the surface.	 Oligochaete Segmented worms that often has bristles to help it move.	 Bloodworm Some may have a red color, many live in the sediment at the bottom.
 Midge Larva They are different from worms in that they are segmented and have a head and foot-like appendages.	 Water Bear Have eight legs with four claws on each, usually live on mosses, lichens, and freshwater plants.	 Cyclops A member of the copepod family; two eggs; six, six visible in the picture.		

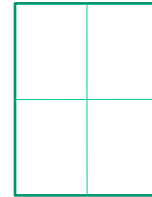
Terms to know ...

Phytoplankton = Microscopic plant life

Zooplankton = Microscopic animal life

A few things to remember ...

- 1 – Only use the **RED** banded and **YELLOW** banded objectives.
- 2 – Place the slide on the stage and move the stage clips out of the way. Use the **BIG KNOB** to get it into view and then the **SMALL KNOB** to make it clearer.
- 3 – Do not use too much water when making your wet-mount slide! It is better to look at 10 little drops rather than 1 big drop.
- 4 – **CLEAN UP!**
 Turn off microscope
 Use a paper towel to dry off the slide and cover slip.
 Put both on the tray with the dry paper towels.



Note: You will need to have at least 4 organisms on pg. 18 with a picture, name, and power of magnification. Due Thursday!

CARRY WITH 2 HANDS – ONE ON THE ARM AND ONE ON THE BASE!

Done drawing your pond water organisms?

1 – You may try to find other organisms.

2 – You may study for the microscope quiz on Thursday. Go to the Microscopes page of the Kid Zone (Science Spot) for links to help you study.

3 – You may work on homework from another class or read a book.

Games & Quizzes
[Microscope Parts Quiz 2](#)
[Micro Parts & Functions Quiz](#)
[Quia - Microscope Mania](#)
[Game](#)
[Quizlet - Parts of a Microscope](#)
 Visit
[Compound Microscope Diagram](#)
 if you need help with the parts of a microscope