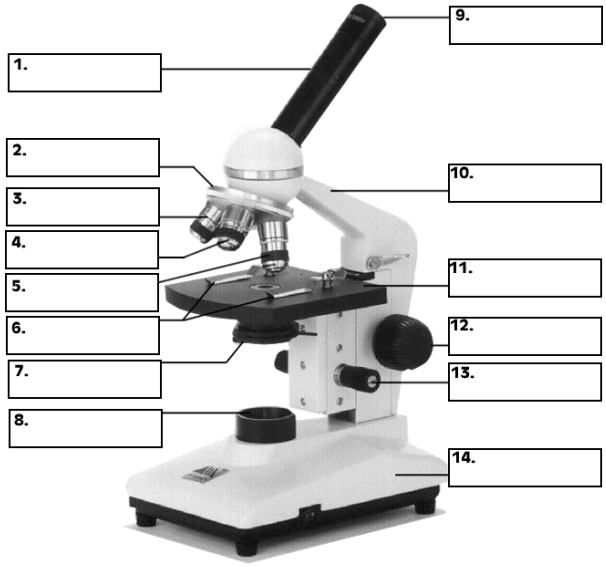
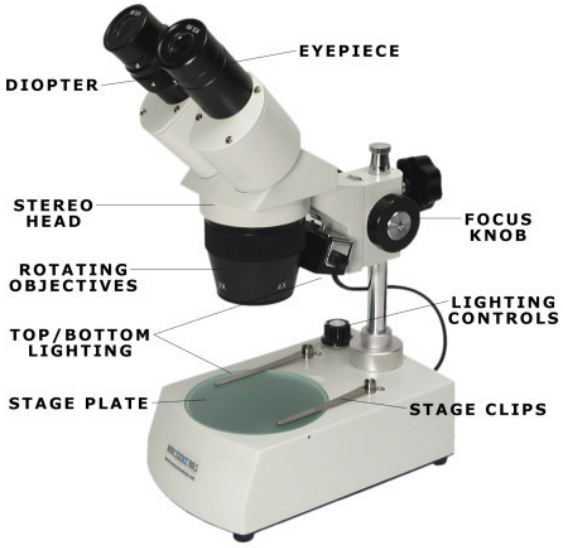
The Microscope – An Introduction

Name _____
Date _____ Period __

Light Microscope:



Stereo (or Dissecting) Microscope:



It is essential that you are adept at using the microscope in order to study organisms too small to be seen by the naked eye. It is particularly important to have good microscope technique because the relative sizes of these individuals are small (hey ... microscopic). Listed below are some useful tips for using the microscope:

1) Always begin with the microscope set to its lowest magnification.
2) Start with the stage (where the slide sits) as far away from the objective as possible.
3) While looking under the microscope ... slowly move the stage and objective lens closer together until something comes into focus (hopefully this is what you are looking for).
4) Without moving the stage rotate the objective lens to the next highest power and use the fine-adjustment knob (the little one) to make the object clearer.

Top 2 Tips:

1.

2.

Figuring out Magnification and Size

Ocular Lens	Objective Lens	Total Magnification	Diameter of the F.O.V.
10X	4X	40X	5mm
10X	10X		
10X	40X		
10X	100X		

Comparing Magnification and Field of View

The BIG Idea: When looking under the microscope, what happens to the diameter of the Field of View (F.O.V.) as you increase the magnification? _____

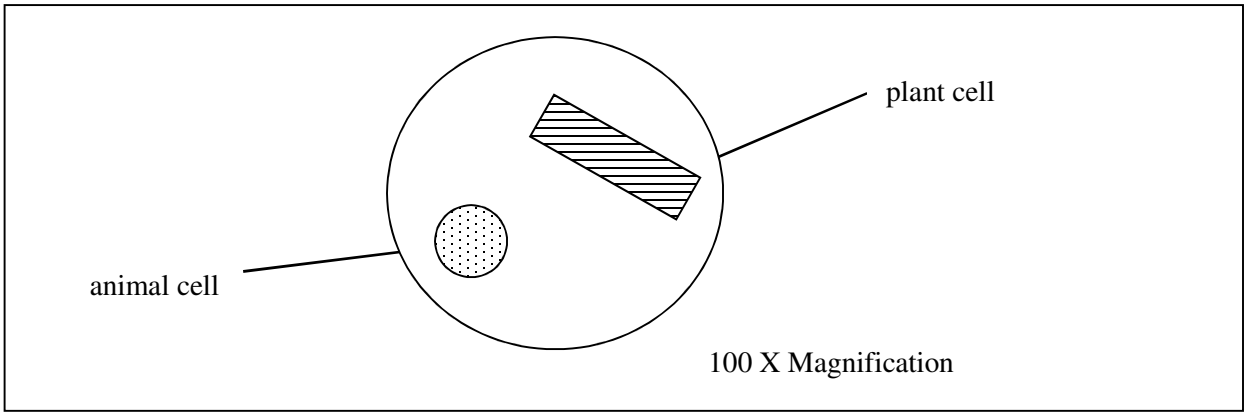
Draw something with **LOW** magnification, this has a _____ field of view.

Draw something with **HIGH** magnification, this has a _____ field of view.

Helpful Conversions:

	Units of measurement:	Compared to a meter:
	m = meter	
1 m = 100 cm	cm = centimeter	1 cm = 10^{-2} m
1 cm = 10 mm	mm = millimeter	1 mm = 10^{-3} m
1 mm = 1000 µm	µm = micrometer	1 µm = 10^{-6} m

The cells below were seen under the microscope. Use the picture below to answer the questions that follow. Assume the diameter of the Field of View (F.O.V.) is 1 mm at 100 X Magnification.

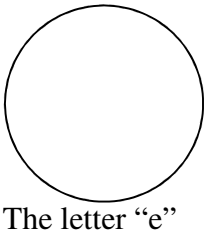


If you changed the magnification to 400 X:

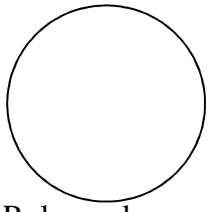
1) How many animal cells would fit across the diameter of the F.O.V.? _____

2) Would you see more or less plant cells? _____

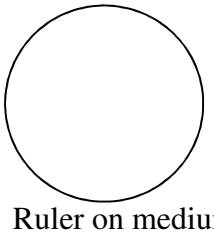
Microscope Warm up



The letter "e"



Ruler on low power

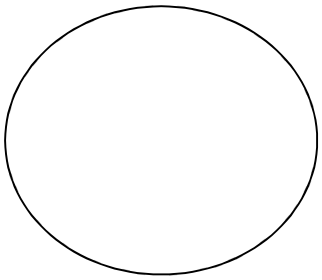


Ruler on medium power

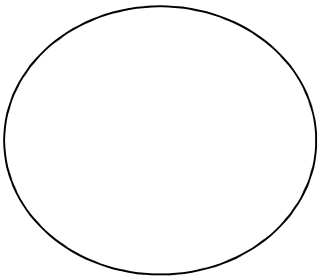
Observing Cheek Cells <u>OR</u> Onion Cells

Cheek Cell Procedure:

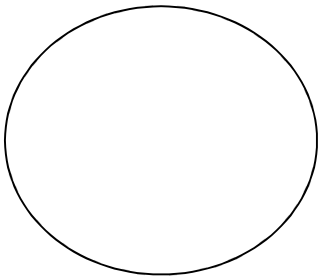
1) Use a flat toothpick to scrape the inside of your cheek in order to obtain some of your cells.
2) Rub the toothpick onto a glass slide.
3) Prepare a wet mount using 1 drop of methylene blue to stain the cells.
4) Sketch and label several cheek cells in the space below showing cell membrane and nucleus.
5) Make sure all materials are rinsed, dried and put away.



40X



100X

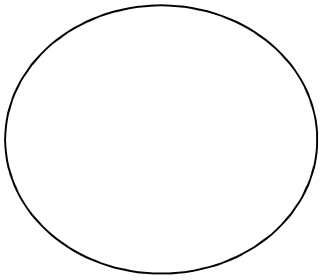


400X

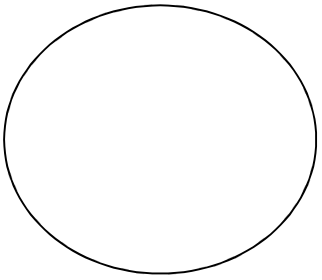
About how big are cheek cells? _____

Onion Procedure:

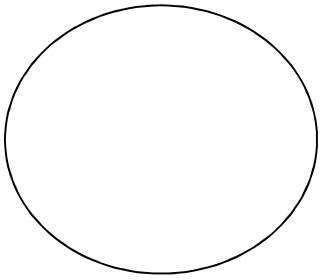
1) Remove the thin piece of skin from an onion (on the non-purple side) and prepare a wet mount.
2) Add 1 drop of iodine to the slide.
2) Sketch and label some cells in the space below showing cell wall and nucleus.
3) Make sure all materials are rinsed, dried and put away.



40X



100X



400X

About how big are these cells? _____