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| Grade Level/Course: Grade 7 Life Science |
| Lesson/Unit Plan Name: Microscope Lab and Lessons |
| Rationale/Lesson Abstract: SWBAT <ol style="list-style-type: none"> 1. Identify parts and function of a microscope, 2. Use a microscope, 3. Successfully prepare a wet mount slide and focus the slide under 2 to 3 magnifications, 4. Correctly draw and label object they are viewing 5. Identify cell structures of cheek cell. 6. Identify plant cell structures. |
| Timeframe: 1 to 3 days |
| Standard(s): California State, Science, Grade 7 <ul style="list-style-type: none"> • 7.1.a Students know cell function similarly in all living organisms. • 7.7.a Students will select and use appropriate tools and technology (including calculators, computers, balances, spring scales, microscopes, and binoculars) to perform tests, collect data, and display data. |

Instructional Resources/Materials:

1. PowerPoint
2. Slides
3. Water
4. Lab Notebooks
5. Toothpick
6. Microscopes
7. Elodea leaves (purchase at pet store)
8. Newspapers
9. Iodine

Lesson/Activity:

Teacher presents Introduction to Microscope PowerPoint. Teacher then demonstrates proper use and handling of microscope, slides, and lab material. Students receive Microscope Worksheet and Microscope Study Guide. Next, students review lab handouts independently and then relocate to lab groups to begin “e” lab.

Teachers, there are three labs.

1. *How to use the microscope*
2. *Cheek cells*
3. *Plant cells (elodea leaf)*

Assessment:

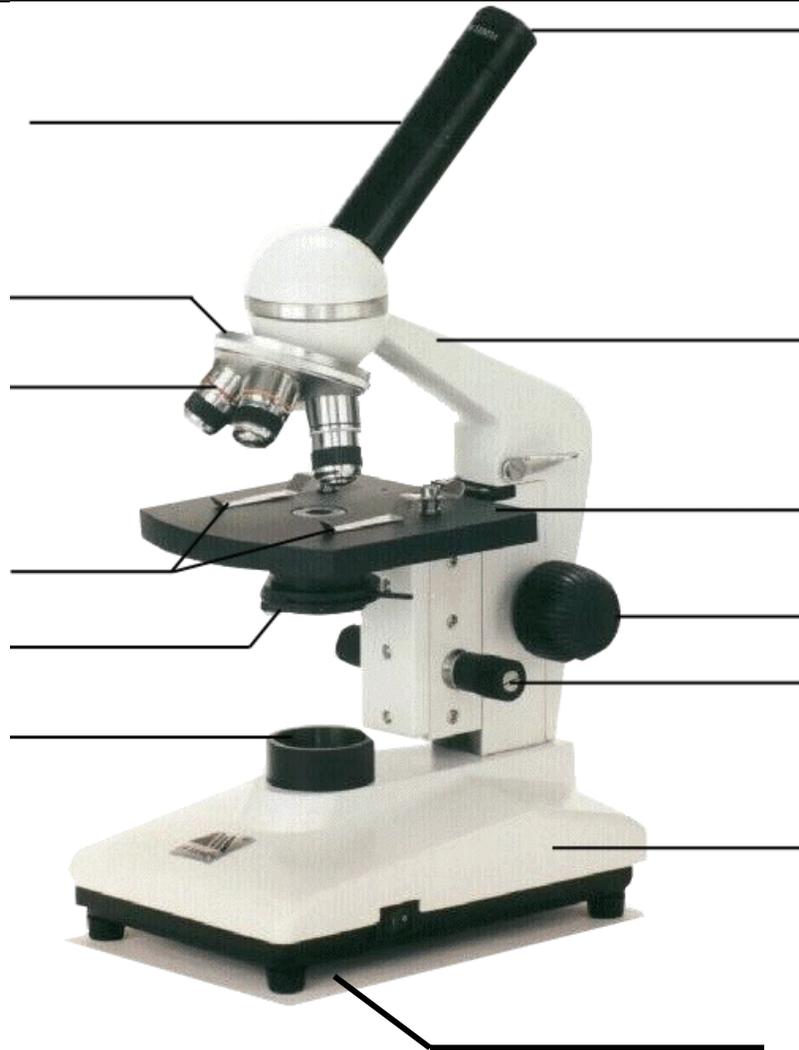
1. Teacher observes each lab group/station for proper usage of microscope.
2. Quiz or test on parts and usage of microscope. Teacher generated.
3. Lab book write up of labs.

Name _____ Period _____ Date _____

Microscope Worksheet

Please use the words from this word list to identify the parts of the microscope. Write the matching word on the line which points to that part of the microscope.

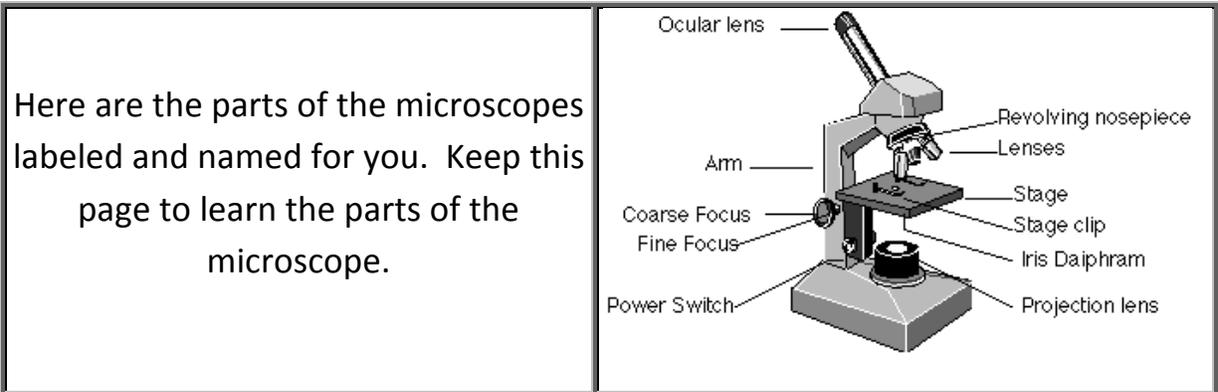
| | | |
|----------------------|--------------------|--------------------------|
| 1. Arm | 5. Ocular Lens | 9. Power Switch |
| 2. Objective lenses | 6. Base | 10. Revolving Nose Piece |
| 3. Course Focus Knob | 7. Fine Focus Knob | 11. Iris Diaphragm |
| 4. Projection Lens | 8. Stage | 12. Stage Clips |



Name _____ Period _____ Date _____

Microscope Study Guide

Here is a microscope with the major parts named. You may use this page to help you familiarize yourself with the parts of the microscope.



Adjustment mechanisms (Course Focus/Fine Focus) - an apparatus that moves the optic tube up and down to focus on the specimen

Arm - portion of microscope that connects the body to the base

Base - a stable bottom for the microscope to stand upright (not labeled)

Iris Diaphragm – Allows light to settle onto slide

Ocular Lens or Eyepiece - lenses at the viewing end of a microscope or telescope

Lenses or Objective - lens at the end of a microscope nearest the object

Stage - a platform on top of the base of the microscope on which specimen are placed

Stage Clip – clips on top of stage that allow you to secure the specimen or slide.

Revolving Nosepiece – a portion of the microscope that allows you to switch back and forth between lense powers.

Power Switch – on/off button that powers the light.

Projection Lens – the source of light used.

Name _____ Period _____ Date _____

Objective _____

How to Use a Microscope Lab

Goals:

- To find specimens using low and high power.
- To make a wet mount.

I. Procedure: Letter "e" (Wet Mount)

1. Cut out the letter "e" and place it on the clean slide face up.
2. Add ONE (1) drop of water on top of the "e."
3. At a 45° angle, SLOWLY and GENTLY lower the clean cover slip on top of the "e" and water drop. Draw what you see on the slide in **Figure A**.
4. Place the slide on the stage and view it on low power (4x). Center the "e" in your field of view. Draw what you see on the slide in **Figure B**.
5. As you move the slide to the left, take notice of what happens. Also take notice when you move the slide to the right, up and down
6. View the specimen under high power (40x). **Only** use the fine adjustment knob to focus your image. Draw what you see in **Figure C**.

I. Data: The Letter "e" (9 pts each)

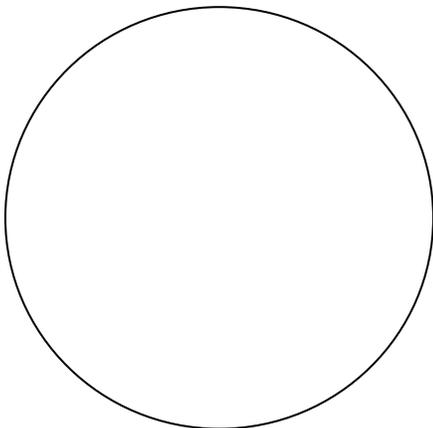


FIGURE A

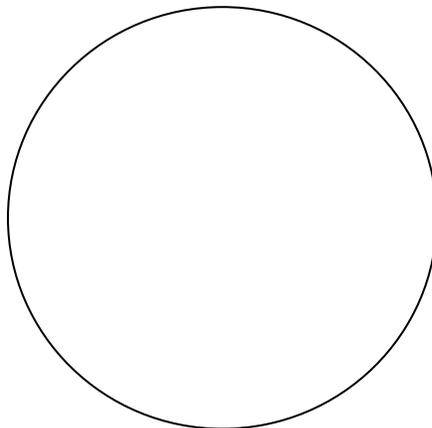


FIGURE B

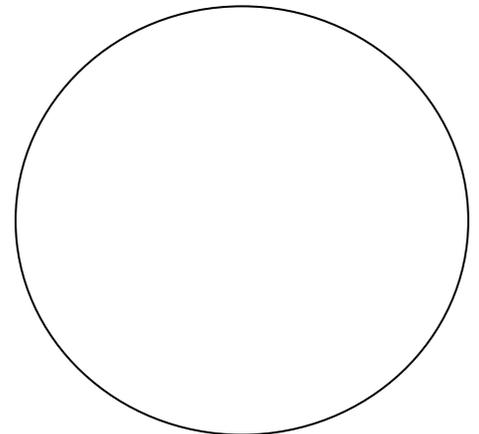


FIGURE C

I. Analysis Questions: The Letter "e"

1. How does the letter “e” as seen through the microscope differ from the way an “e” normally appears? (4 pts)
 2. When you move the slide to the left, in what direction does the letter “e” appear to move? When you move it to the right? Up? Down? (4 pts)
 3. How does the ink appear under the microscope as compared to the normal view? (4 pts)
 4. Why does a specimen placed under the microscope have to be thin? (4 pts)
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IV. Conclusion: Microscope Lab

1. Write 5 to 6 sentences on what you learned from this lab. (5pts)

YOU MUST CLEAN UP! ALL SLIDES SHOULD BE CLEANED & PUT AWAY! MICROSCOPES TURNED OFF

Name _____ Period _____ Date _____

Objective _____

Cheek Cell Lab

Goals:

- To find specimens using low and high power.
- To observe human cheek cells.

II. Procedure: Cheek Cell

1. Place a small drop of iodine onto a clean slide.
2. Using a toothpick, gently scrape the inside of your cheek. As you scrape, slowly twirl the toothpick on your cheek in order to cover all sides of the toothpick with cells.
3. Place the toothpick tip into the iodine and mix. The iodine stains the cells so that you can see them.
4. Place the slide under low power (4x). Draw what you see in **Figure D**.
5. Switch to high power (40x). Draw 2 or 3 cells in **Figure E**. Label the nucleus, cell membrane, and cytoplasm.

II. Data: Cheek Cell (9 pts each)

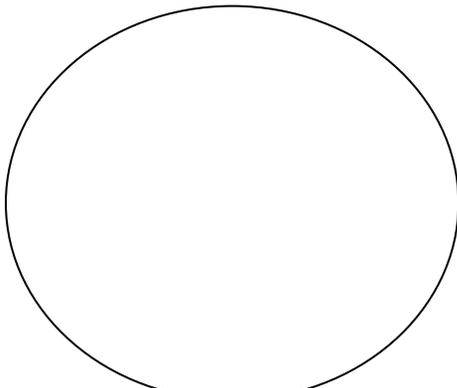


FIGURE D

Low power cheek cell.

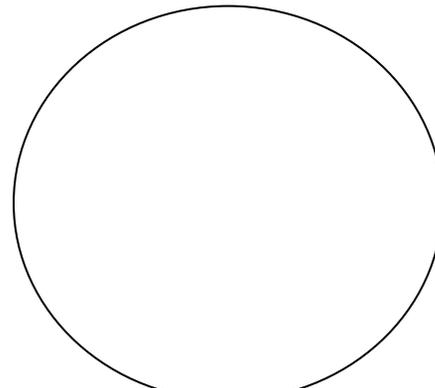


FIGURE E

High power cheek cell.

II. Analysis: Cheek Cell

1. Why did you add iodine to your cheek cells? (4 pts)
2. What structure in the cheek cell was stained the darkest? (4 pts)
3. Is your cheek cell a prokaryotic or eukaryotic cell? (4 pts)

IV. Conclusion: Microscope/Cell Lab

1. Write 5 to 6 sentences on what you learned from this lab. (5pts)

Name _____ Period _____ Date _____

Objective _____

Plant Cells (Elodea leaf) Lab

Goals:

- To find specimens using low and high power.
- To observe plant cells.

III. Procedure: The Leaf

1. Place a drop of water on a clean slide.
2. Place a leaf in the drop of water, and then cover with a cover slip.
3. Observe the leaf under low power first (4x), then under high power (40x). Draw in **Figure F** what you see. Label the following organelles: nucleus, cytoplasm, cell wall, chloroplasts.

III. Data: The Elodea Leaf (9 pts)

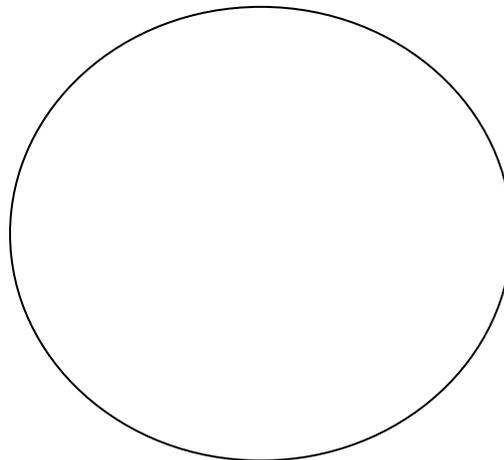


FIGURE F

III. Analysis: The Elodea Leaf

1. Was anything happening in your cell? (4 pts)
2. What structures were in both the plant and animal cell? (4 pts)
3. What structures were only in the leaf cell? (4 pts)

IV. Conclusion: Microscope/Plant Cell Lab

1. Write 5 to 6 sentences on what you learned from this lab. (5pts)
2. Compare and contrast animal and plant cells. (8pts)

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