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

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Use of the Compound Light Microscope

**Arizona Science Standards:**

* S1- C2 – PO5

**Ag Standards:**

* 10.0 – Demonstrate laboratory procedures and safety practices

**Objectives:**

1. Practice proper handling and use of a compound light microscope
2. Identify the parts of a compound light microscope
3. Locate objects under low – and high – power magnifications
4. Prepare a wet mount of an insect leg

**Background:**

Possibly the most important instrument used by biologist is the microscope. A microscope aids scientists by allowing them to investigate worlds that would be too small to be seen. A compound light microscope magnifies objects up to approximately 1500 times their original size.

Two types of slides are used with the compound light microscopes; prepared slides and temporary wet slides. Prepared slides are made to last permanently. Temporary wet mount slides are not permanent. Many slides you will use in this course will be wet mounts, thus you will make them yourselves.

The eye piece contains a glass lens that magnifies 10 times (10x). The low –power objective also contains a lens that magnifies 10 times (10x). Therefore the total magnification of an object viewed under low power is 100x. Total magnification is calculated by multiplying the magnification of the objective by that on the eyepiece.

**Pre Lab Questions: (WRITE INTO YOUR BOOK – QUESTION AND THEN ANSWER)**

1. Describe the difference between the two types of slides used with compound light microscopes?
2. How much does the low power objective magnify an item?
3. How do you calculate the magnification of the objective?

**Materials:**

* Compound light microscope
* Prepared slide with letter “E”
* Coverslip
* Preserved insect leg
* Microscope slide
* Dropper
* Lens paper
* Water
* Forceps

**Procedures:**

* + - 1. **In your Lab book copy the following tables down, leaving room for drawings**

**Table 1**

|  |  |  |
| --- | --- | --- |
| Drawing of Letter “E” | | |
| **View** | **Magnification** | **Drawing** |
| **Not under Microscope** | **N/A** |  |
| Low Power |  |  |
| **Mid Power** |  |  |
| **Highest Power** |  |  |

**Table 2**

|  |  |  |
| --- | --- | --- |
| Drawing of Insect Leg | | |
| **View** | **Magnification** | **Drawing** |
| **Not under Microscope** | **N/A** |  |
| Low Power |  |  |
| **Mid Power** |  |  |
| **Highest Power** |  |  |

**Do the following procedures while filling in your data chart.**

**Part A:**

1. Turn and click the low-power objective so that it is directly over the stage opening
2. Draw what the prepared slide of the letter “E” looks like on Table 1
3. Place the prepared slide of the letter “E” on the stage. Hold in place using the stage clips
4. Slowly lower the low-power objective by turning the coarse-wheel adjustment until the objective almost touches the glass slide
5. Focus on the letter “E” on the lowest power, Draw what you see on Table 1
   1. Move the slide around using the knobs on the slide, go slowly until you see the “E”
   2. While looking through the microscope, fine tune the focus by turning the fine-wheel adjustment
6. Move to the next highest power, and draw what you see on Table 1
   1. Lower the stage only slightly, turn the objective wheel, raise the stage slowly, adjust using the fine-wheel adjustment
7. Move to the highest power possible, and draw what you see on Table 1
   1. Lower the stage only slightly, turn the objective wheel, raise the stage slowly, adjust using the fine-wheel adjustment

**Part B:**

1. Gather the slide that has been prepared for you
2. Draw what you see on Table 2
3. Under low power, locate the insect leg.
4. Focus on the insect leg on the lowest power, Draw what you see on Table 2
   1. Move the slide around using the knobs on the slide, go slowly until you see the insect leg
   2. While looking through the microscope, fine tune the focus by turning the fine-wheel adjustment
5. Move to the next highest power, Draw what you see on Table 2
   1. Lower the stage only slightly, turn the objective wheel, raise the stage slowly, adjust using the fine-wheel adjustment
6. Move to the highest power possible, Draw what you see on Table 2
   1. Lower the stage only slightly, turn the objective wheel, raise the stage slowly, adjust using the fine-wheel adjustment

**Post Lab Questions: (in your lab book write the question and the answer)**

1. In which direction does the table move as you turn the coarse wheel adjustment towards you?
2. In which direction does the table move as you turn the coarse-wheel adjustment away from you?
3. What is the total magnification of your microscope under low power?
4. What is the total magnification of your microscope on the highest power?
5. TRUE OR FALSE: Objects viewed under the microscope appear upside down?