

Lab Title:... *Tools Of The Biologist*.....Lab #.....

Lab Partners:.....

Your Lab Score will be based on the following:

Neatness: All labs must be **well-written and done in pencil** unless directed otherwise.

There are to be no cross-outs or misspelled words. Questions should be answered in complete sentences.

Accuracy: Certain **questions will be checked** for accuracy.

Completeness: All questions are to be answered completely. There are to be **NO BLANKS** or incomplete sections.

Lab Class Procedure: You are to **follow directions** and use lab equipment properly, work for the entire period, and follow proper clean-up procedures

Rubric:

| Lab Score Category | Points Earned | | | | | | | | | | |
|-------------------------------|---------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|
| Neatness | 0 | 1 | | | | | | | | | |
| Accuracy | 0 | 1 | 2 | 3 | 4 | | | | | | |
| Completeness | 0 | 1 | 2 | 3 | | | | | | | |
| Lab Class Procedure | 0 | 1 | 2 | | | | | | | | |
| <u>Total Lab Score</u> | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| | 10 | | | | | | | | | | |

You are to submit all lab material with this lab report:

Comments:

Tools of the Biologist

Introduction: Tools help use do things. Just as mechanics have tools to help them do their job, biologists have their tools as well. We have already met and used a few of them. In this lab, you will get a chance to actually use some of these tools and techniques and thereby become more familiar with them.

How this will work: Students will work in groups to rotate through the different stations. They do not need to be completed in any particular order but they do need to be completed...today! All data is to be recorded by each individual in the space provided. At the end of the lab are conclusion questions to be answered by each individual.

The stations:

Station 1 – Measurement

What is the mass of the rat in the jar? No, you can't take the rat out of the jar.

Before you start, how are you going to determine the mass? (describe your procedure)

Make a data table and show your calculations below.

Mass of rat to the nearest 10th of a gram: _____

Station 2 – Funny-Looking Microscope AKA Stereomicroscope

Include the following observations on your data sheet using complete sentences:

- List three ways this microscope is different from the other microscope we have in class (transmission light microscope)
- Make a bulleted list of five observations made when viewing one of the dead insects provided. (If the specimens totally gross you out you may make observations of the end of your finger instead)

Three differences:

- a.
- b.
- c.

Station 2 – Funny-Looking Microscope AKA Stereomicroscope (con't)

Three similarities:

a.

b.

c.

Observations of a _____ (what did you look at?)

a.

b.

c.

d.

e.

Identify a lab activity where this equipment would be more useful than the other compound microscope:

Station 3 – Centrifuge

- Put 10 mL of "blood" into each of two test tubes and place them in opposite positions in the centrifuge.
- Don the safety goggles.
- Turn knob clockwise $\frac{1}{2}$ turn.
- Let spin for 1 minute.
- After spinning stops completely, remove test tubes and make observations.
- Clean out test tubes

What happened to the "blood"?

What might this equipment be used for outside of the classroom?

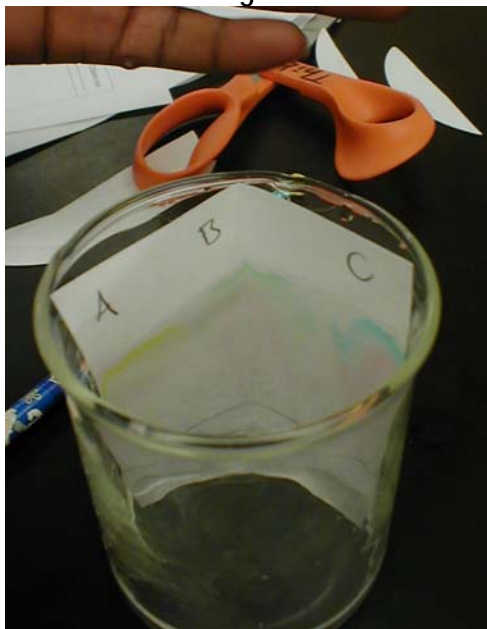
Station 4 – Paper Chromatography

- On a square piece of chromatography paper, draw a pencil line two cm from the bottom.
- Make three dots with the different markers/solutions evenly spaced along the line you drew.
- Label "A", "B" and "C" across the top of the paper as shown in fig. 1 below
- Measure out 10 mL of water into the small beaker.
- Stand the chromatography paper line-side down in the beaker – The marker dots should not be submerged. The paper will stand better if you fold it once. Your set up should look like fig. 2
- Wait 3 minutes
- Record the distances each separated color moved from the starting point

Fig. 1



Fig. 2



Station 4 – Paper Chromatography (cont'd)

| Be sure to label the starting color → | Solution A/Marker color _____ | Solution B/Marker color _____ | Solution C/Marker color _____ |
|--|----------------------------------|----------------------------------|----------------------------------|
| Separated colors and distance traveled by each | | | |

Which solution/Marker had the most different colors? The least?

