

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

## Unit 1 Review

Date \_\_\_\_\_

### Characteristics of life

1. **BIOLOGY** is the study of life
2. Another word for a living thing is an **ORGANISM**
3. Organisms are able to maintain a stable internal environment even though the external environment is constantly changing, this is called **HOMEOSTASIS**
4. Describe an example of homeostasis
  - a. **Sweating or shivering to adjust to a change in temperature**
  - b. **Increasing breath/heart rate during exercise**
  - c. **Insulin production after eating**
5. Define metabolism
  - a. **All of the chemical reactions that happen in the cells of living organisms to sustain life.**

### Life Functions

*Briefly describe the following*

1. Nutrition      **Obtaining and breaking down nutrients to a usable form for cells**
2. Transport      **Delivering materials to and from EVERY cell in the body**
3. Respiration      **Converting glucose (unusable) into ATP (usable)**
4. Excretion      **Removal of metabolic wastes**
5. Synthesis      **cells combining small molecules into larger complex molecules**
6. Growth      **Increase in size (addition of cells)**
7. Regulation      **Coordination and control of all the other life functions to maintain homeostasis**
8. Reproduction\* **creating more of the SAME kind**

*Fill in the following:*

9. Oxygen moving into cells and carbon dioxide leaving the cells is an example of **TRANSPORTATION**
10. Cells carrying out **RESPIRATION** when they convert the stored energy in glucose to make ATP
11. Humans release carbon dioxide (metabolic waste) from the lungs. This is an example of **EXCRETION**
12. The human brain maintains a constant pH, this is an example of the life function of **REGULATION**

13. Pick two life functions and explain how they work together to maintain homeostasis

**Nutrition provides the organism with the food it needs. Transportation then brings this food to cells. Inside the cells respiration turns unusable energy into usable energy (ATP). During this process waste materials are produced and discarded through excretion.**

14. Reproduction is not necessary to sustain life of the individual organism, explain why it is then considered to be a life function.

**Life would not exist if it was not for reproduction, once organisms died there would be no more living things**

## Tools of the biologist

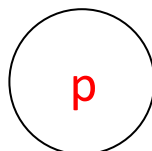
1. What is the total magnification of a compound light microscope that has a 10x eye piece and a 43x objective  
**430x**
2. How did you arrive at that answer?

**Total magnification is determined by multiplying the eyepiece magnification by the objective magnification (10x43)**

3. How many micrometers are equal to 1 millimeter **1000**
4. Which has a larger field of view, low or high power? **Low power**
5. When viewing a specimen a student should always start with **Lowest** power and focus using the **coarse** adjustment
6. You should only have to adjust the **fine** adjustment when under high power.
7. As you increase magnification you must **INCREASE** the amount of light
8. What could happen if you used the coarse adjustment on high power?

**You could damage the objective and crack the slide or you can get very out of focus**

9. In the circle below draw the letter "d" as it would appear if views through a microscope



10. The **Electron microscope** is the most powerful microscope

11. What is the proper procedure for focusing an object under High power starting with placing the slide on the stage.

**First turn on the light and adjust the diaphragm to allow light through, then select the lowest power objective and use the coarse adjustment knob to focus the object. Center the object and use the fine adjustment to better focus the object before switching to the next objective. Increase the light by turning the diaphragm and re-focus using the fine adjustment before turning to the highest power. Finally increase the light again and re-focus using the fine adjustment**

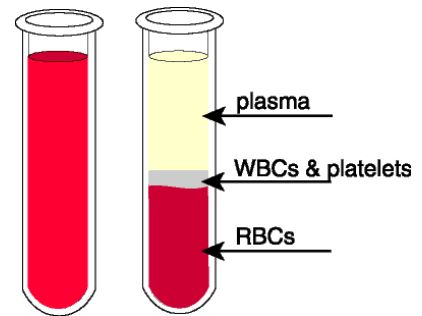
See my site for more info on the things below

12. What would you use a centrifuge for?

**To separate parts of a mixture by density**

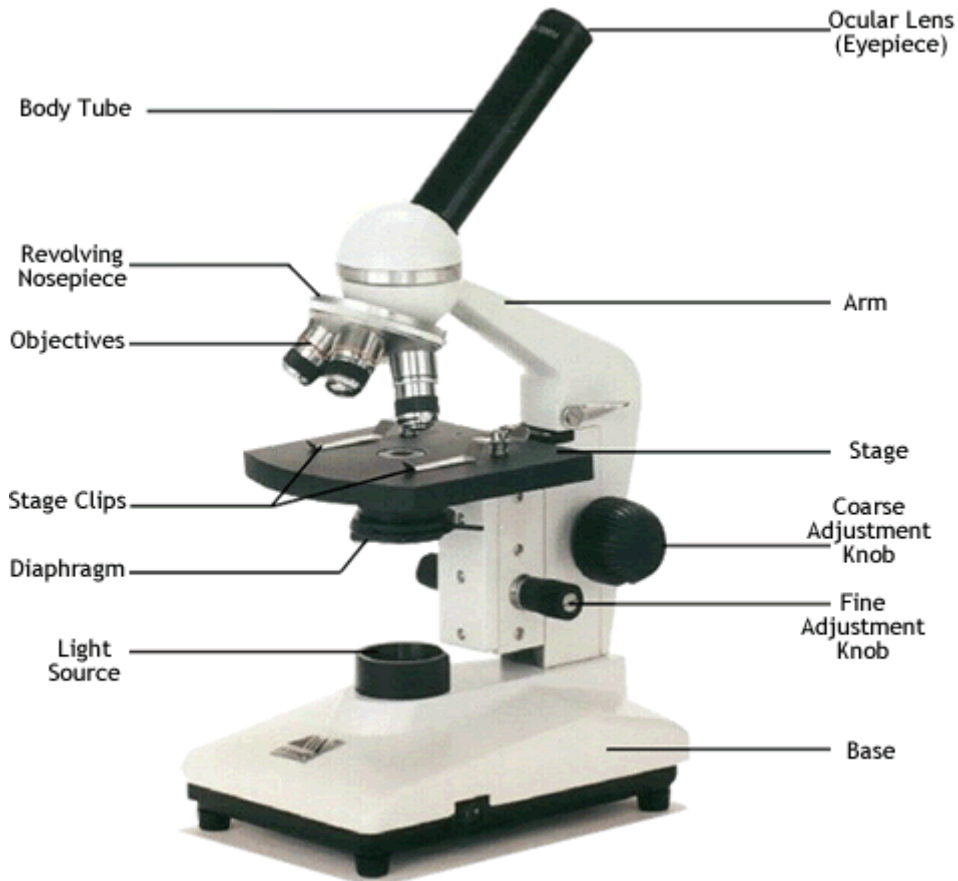
13. Gel electrophoresis separates **DNA** and **RNA** fragments by size

14. What is chromatography used for?



**To separate out pigments from a mixture based on absorbance**

Fill in the missing labels



## The scientific method

1. What is the scientific method?

A sequential process used to answer questions or solve problems

2. List the steps of the scientific method

- 1) Problem
- 2) hypothesis
- 3) experiment
- 4) data
- 5) conclusion

3. Define a hypothesis

a proposed explanation for an unknown phenomenon, question or problem.

4. In what form should your hypothesis be written "IF \_\_\_IV\_\_\_\_\_ THEN \_\_\_DV\_\_\_\_\_"

5. What is a control group and why is it necessary in an experiment

The group that does not receive the Independent variable and is considered to be under normal conditions.

6. Why is it best to have a large sample size when conducting an experiment

This provides the most accurate results and prevents outliers or exceptions from effecting the results.

7. List three characteristics of a valid experiment

Proper hypothesis

Repeatable results

large sample size

Control group

Only ONE variable

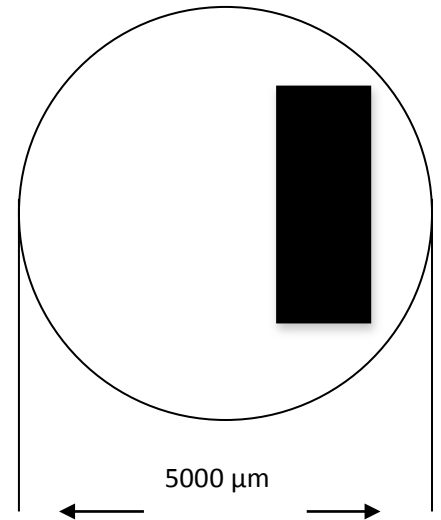
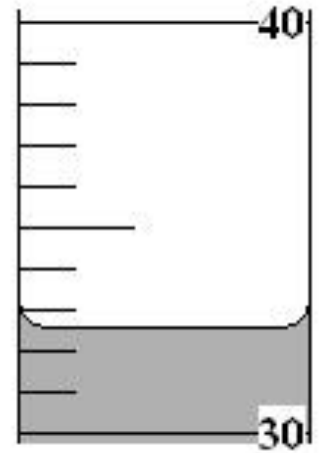
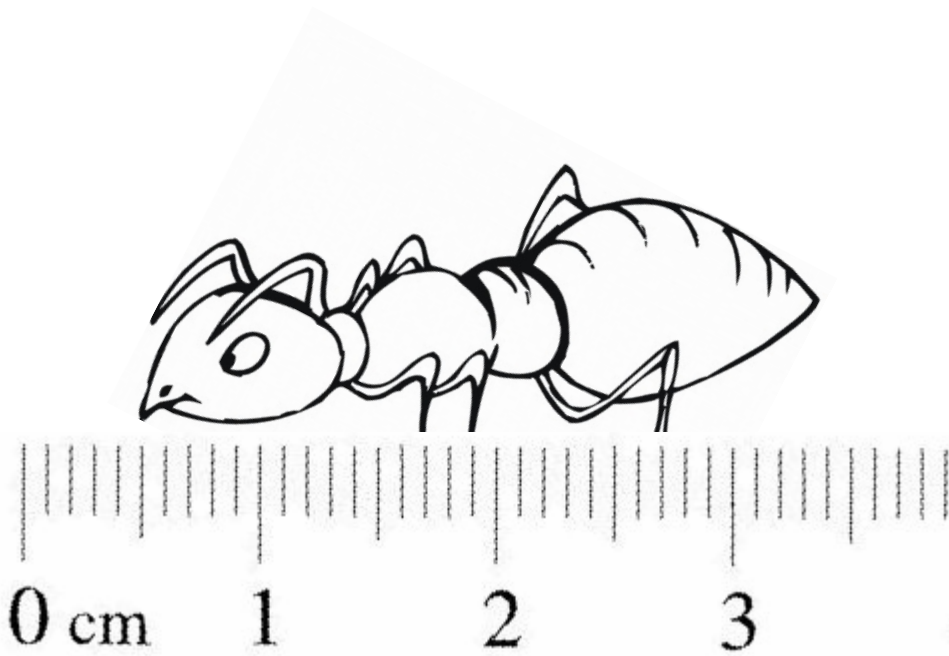
8. When can results be reported as valid?

After the experiment has been repeated many times and peer reviewed

9. Does your hypothesis need to be proven in order to conduct a successful experiment? Why or why not?

No, as long as your data is accurate and your experiment tested your hypothesis it can prove your hypothesis wrong

## Measuring



- 1) How long is the ant? **28 mm**
- 2) What is the reading in the graduated cylinder? **32.5 ml**
- 3) How big is the Black box **1,000 μm** (about 5 boxes will fit across the FOV)
- 4) How many grams are in a kg **1,000**
- 5) When measuring a liquid you read at the bottom of the **MENISCUS**

Based on her field experiments a scientist observed that a certain species of insects require a specific range of air temperatures in order to live. She tested her hypothesis by exposing larval stages of this species to varying air temperatures. The data from her experiments is shown below. Use the data to answer the following questions.

Temperature (°C)	Survival rate (%)
15	0
16	20
17	60
18	80
19	90
20	100
21	100
22	80
23	73
24	30
25	0

1) What is the independent variable in this experiment

**Temperature**

2) What is the dependent variable

**Survival rate**

3) What type of graph would you use to display this experiment and why ?

**Line graph, because it will clearly show the trend of survival based on temperature, you would also be able to determine the approximate survival rate of an unknown or untested temperature**

4) Draw the type of graph described above. Be sure to label the axis.

**Survival rate at various temperatures**

