Chapter 1 (The Science of Life)
Lecture Notes

1. **What is the 1st step of the scientific method and what does it lead to?**

2. **2nd Step of the Scientific Method: _____**
    a. **What needs to be gathered about the question? _____**
    b. **Where does the problem statement come from? _____**
    c. **How is the Problem stated? _____**

3. **3rd Step of the Scientific Method: _____**
    a. **How do you gather Information? _____**
    b. **Any related factors from your: _____**

4. **4th Step of the Scientific Method: _____**
    a. **Hypothesis is a _____ solution to the problem.**
    b. **Based on: _____**
    c. **Educated prediction: _____**

    _____

5. **5th Step of the Scientific Method: _____**
    a. **Experimentation: _____**

    _____

    b. **What is a 'proper experiment'? _____**

    _____

c. Control Group:

i. **The group NOT GIVEN : _____**

ii. **All CONDITIONS/FACTORS are kept: _____**

d. Experimental Group: _____

_____

i. **How many CONDITIONS/FACTORS are changed at a time: _____**

WHY: _____

ii. **The condition that changes is called the _____**

iii. **The condition that results from changing the indepentent variable is known as the:**

_____

e. Video: Parts of an Experiment (Experimenting on Frogs Eggs)

i. **What is a Controlled Experiment? _____**

_____

ii. **What was the Problem Statement? _____**

_____

iii. **What is a Variable? _____**

iv. **What was the Variable in the Frog Experiment? _____**

v. **What must be kept "the same throughout the experiment"?**

_____

vi. **What variable should cause the change, if any, in an experiment?**

_____

f. Graphing Your Experimental Results (Independent & Dependent Variables)

i. **What is the Problem Statement about Ebola fever?**

_____

ii. Controlled Experiment:

1. **Controlled Group: _____**
2. **Experimental Group: _____**
3. **_____ is the factor that is deliberately manipulated**
4. **What was the Independent Variable? _____**
5. **What was the Dependent Variable? _____**
6. **Experimental Data from Monkey Experiment on Ebola Fever:**
   a. **Experiment was conducted over an 8 week period.**

	Control Group:	Experimental Group:
Wk 1	**10000 cells**	**100000 cells**
Wk 2	**990 cells**	**965 cells**
Wk 3	**975 cells**	**900 cells**
Wk 4	**970 cells**	**850 cells**
Wk 5	**958 cells**	**735 cells**
Wk 6	**950 cells**	**600 cells**
Wk 7	**935 cells**	**367 cells**
Wk 8	**923 cells**	**191 cells**

7. **Question: If you were to graph the results from the Ebola Experiment, which variable would be on the X Axis and what variable would be on the Y Axis? (**
   a. **X Axis: _____**
   b. **Y Axis: _____**

g. Graph the Data from the Monkey Experiment on Ebola Fever below:

6. **In the experiment to test: *The Effectiveness of a Flea Powde on Dog*s:**

    a. **What is the Problem Statement: _____**

    _____

    b. **What is the Experimental Variable in this experiment? _____**

    c. **What is the Control Group? _____**

    d. **When graphing your Data:**

        i. **What is the independent variable? _____**

        ii. **What is the dependent variable? _____**

        iii. **The 6th Step of the Scientific Method? _____**

        iv. **How do you organize your data? _____**

        v. **What do you create to present your data in a picture? _____**

        vi. **Did you fail if your hypothesis is proved wrong? _____**

        vii. **How do you communicate your results? _____**

7. **Theory: _____**

    _____ .

8. **What is the advantage of having juvenile Snowy Owls gray and adults white?**

    _____

    _____

9. **Why study biology?**

    _____

    _____

_____

_____

10. How does the Tropical Rain Forest depend on humans?

_____

_____

11. What are the Characteristics of Life?

1._____

2._____

3._____

4._____

5._____

6._____

7._____

12. What is the smallest living structure of an organism? _____

13. Define "Organism" - _____

14. What do all cells have that is unique?

_____

_____

_____

_____

15. What is the Order of Organizaion within a human body (from smallest to largest)

_____

16. What is the difference between a unicellular and multicellular organism?

_____

17. Living things respond to a stimulus. Give an example of a stimulus and a response?

_____

_____

18. Define adaptation: _____

_____

_____

19. If an organism has a very rapid response to an immediate threat as compared to another organism that is slow, how will both organisms adapt to this condition?

_____

_____

20.* Why does your body sweat? What would happen if you perspiration system malfunctioned? Why is very dangerous for an athlete to workout outside when the temperature and humidity are high?** ***NOTE: Relate all this to the ENVIRONMENT and ENVIRONMENTAL CONDITIONS.

_____

_____

_____

21. Homeostasis: Maintaining a Balance

a. Define Homeostasis: _____

b. What is the Environment? _____

_____

c. How does a cell pass on genetic information? _____

_____

_____

d. What environmental factors to interfere with the reproduction of a species?

_____

_____

22. Living Things Use Energy to Power All the Life Process:

a. **Define Metabolism:** _____

_____

b. **What can you do change your metabolism?**
c. **What are Life Processes?** _____

23. Living Things Grow & Develop:

a. **Define Growth:** _____

_____

b. **Define Development:** _____

_____

24. Living Things Reproduce:

a. **Species are:** _____

i. **How are mules produced?** _____

ii. **What are unique about mules? Are horses and donkey's in the same species?**

_____

b. **If an species can not reproduce them will become:** _____

25. Why is it extremely important for organisms to change or evolve over a long period of time?

_____

_____