# Roland-Story Biology Education

## Chapter 1 – Biology and You

Name _____

1. Biology is the study of _____

2. List the seven characteristics of life (they're next to the cheetah picture)

_____ _____
_____ _____
_____ _____
_____

3. All living things are made of one or more _____

4. How many cells are in your body? _____

5. Define reproduction

_____

6. All living things use energy to _____, to _____

and to process information.

7. Plants and algae use solar energy to make molecules in a process called

_____

8. How are arctic seals able to maintain their body temperature?

_____

9. The maintenance of a stable internal environment is called

_____

10. Sets of inherited instructions are called _____

11. DNA stands for _____

12. A change in DNA or a gene is called a _____

13. Mutations that occur in _____ are passed on to other generations.

14. Change in the traits of a species over time is called _____

15. A group of genetically similar organisms is called a _____

16. What is natural selection? _____

17. The science that studies the interactions of living organisms with each other and with the environment is called _____

**Section 1 -2**

18. At the current rate, how long before all the rain forests are destroyed?

_____

19. A person who transplants genes from one organism to another is called a

_____

20. What virus causes AIDS? _____

21. When cells divide uncontrollably in the body, what disease occurs?

_____

22. A person with cystic fibrosis might have trouble _____

**Section 1-3**

23. Define observation?

24. What important observation did John Harte make about tiger salamanders?

25. A [ prediction / hypothesis ] is an educated guess that can be tested by experimentation.

26. Ambystoma tigrinum is a _____

27. Using the graph in figure 1-16, in which month are the pond levels at the highest pH?

_____ In which month is the lake MOST acidic? _____
(read the caption to figure this out)

28. A planned procedure to test a hypothesis is called a(n)

29. In an experiment, a group that receives no treatment is called the _____

30. Study the following steps in a scientific investigation. Number them in the correct order.

____ forming a hypothesis
____ asking a question
____ making a prediction
____ drawing a conclusion
____ experimenting (confirm predictions)

31. Once a scientist completes an experiment, she often publishes the report in a(n):

32. A(n) _____ unites and explains a broad range of observations.

33. It is important in science to not be mislead by [ large / isolated ] observations.

34. To scientists, a theory represents that which they are [ certain / uncertain ] of.

35. To the general public, the word "theory" implies [ certainty / lack of knowledge ]

36. A scientific theory can [ never / sometimes ] be revised or rejected.

37. There is no absolute [ values / certainty ] in a scientific theory.

38. What are David Bradford and John Harte known for and relate this to the Scientific method.

39. A _____ is the condition being tested.

40. A single factor that is observed or measured in an experiment is the?

41. Identify each of the following variables as independent or dependent:

    a. the growth rate of plants _____

    b. the amount of radiation that bacteria is exposed to_____

    c. fungus growing or not growing in a nutrient medium _____

    d. the number of fish after the introduction of a new plant species in a pond ___

42. You hear that taking vitamin B12 (thiamin) every day will repel mosquitoes. Set up a controlled experiment that would test this hypothesis. Identify the following:

    a. Control set up –

    b. Experimental set up –

    c. Independent variable –

d. Dependent variable –

e. 5 constants –

43. Explain how a hypothesis can become a theory.

44. If you found an alien object in a meteorite, what clues would you look for to determine if it was a living thing? (list at least 5)

45. Explain how scientific laws, theories, and hypotheses differ.

46. Explain the difference between 'science' and 'technology' and give an example of each (do not use examples used in class)

47. List the levels of organizations from lowest to highest for living organisms.

48. Biological careers. Summarize what each of the following does:

a. Anatomist

b. Botanist

c. Crime lab technician

d. Ecologist

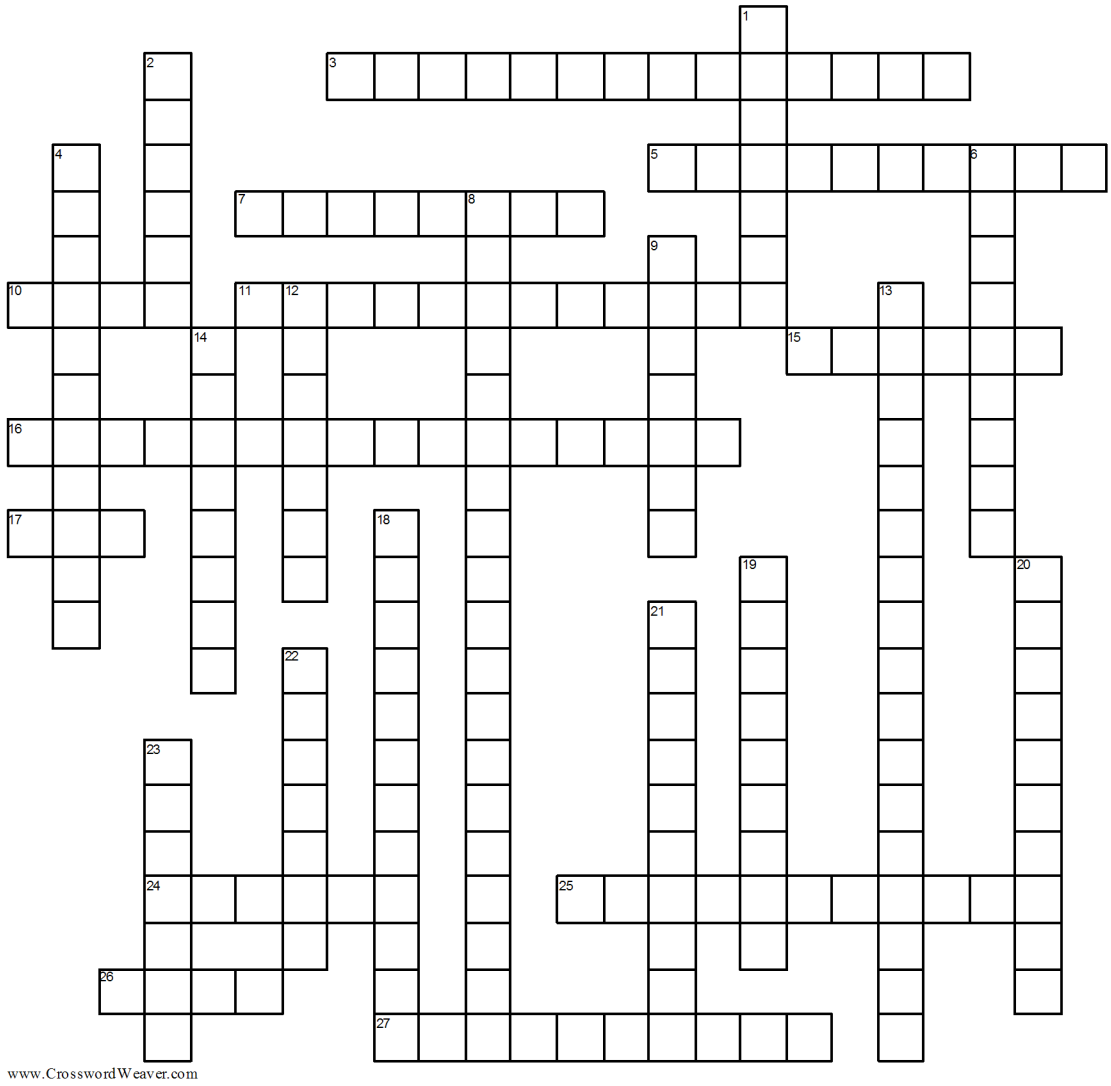
e. Entomologist

f. Epidemiologist

g. Geneticist

h. Physiologist

49. Vocabulary of Chapter 1 – fill out the following crossword puzzle dealing with vocabulary of chapter 1 – Biology and You.




**Clues are on next page**

ACROSS

3 is a heredity disease that is fatal and causes a thick, sticky mucus that clogs passages in body organs
5 is the sum of all of the chemical reactions carried out in an organism
7 A change in the DNA can cause this
10 It is the basic unit of heredity. genes are coded in a molecule called DNA
11 the process by which organisms make more of their own kind from one generation to the next
15 is a set of related hypotheses that have been tested and confirmed many times by many scientists. It unites and explains a broad range of observations
16 individuals with genetic traits that better enable them to survive and reproduce are referred by this
17 a virus that attacks and destroys the human immune system
24 a growth defect in cells, a mechanism that controls cell division
25 it is the maintenance of stable internal conditions in spite of changes in the external environment
26 are highly organized, tiny structures with thin coverings called membranes
27 is the expected outcome of a test, assuming the hypothesis is correct

DOWN

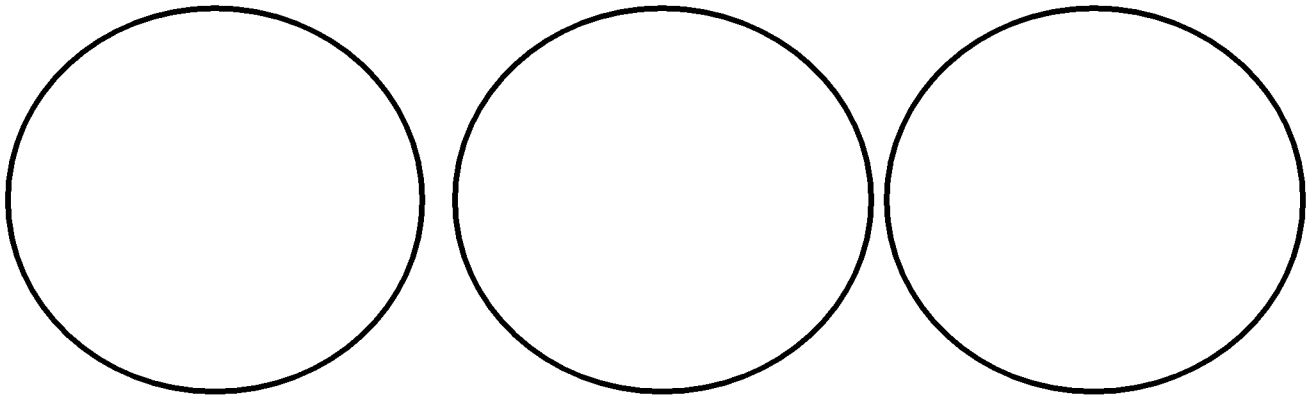
1 an organic compound that is made of 1 or more chains of amino acids and that is a principal component of all cells
2 is the complete genetic material contained in an individual
4 is the act of noting or perceving objects or events using your senses
6 what you conclude or understand about information
8 refers to the factor that is changed within an experiment
9 the study of life
12 this is the branch of biology that studies the interactions of organisms with one another and with the nonliving part of their environment
13 refers to the variable that is measured within an experiment
14 it is the passing of gene traits from parent to offspring
18 is a group within an experiment that receives no experimental treatment
19 this is the change in the inherited traits of species over generations
20 is an explanation that might be true - a statement that can be tested by additional observations
21 a planned procedure to test a hypothesis
22 latin for 'to know'
23 these are a group of genetically similiar organisms that can produce fertile offspring

# Biology Class
## Chapter 1
## Pond Water Activity

Place a drop of water on a clean slide with a dropper. Take a coverslip, and touch it at a 45 degree angle with the water, and lay it down (this elimates air bubbles).

Place the slide on a microscope and focus (start on low power first). You may want to swing a higher power objective into place depending on the size and/or speed of your subject.

1. Looking at the objects under the microscope, make some rough sketches (make them neat) of the things that you see that are living.



2. List as many characteristics as you can that these living (or once living) things display.

3. In your own words, how would you define life?