

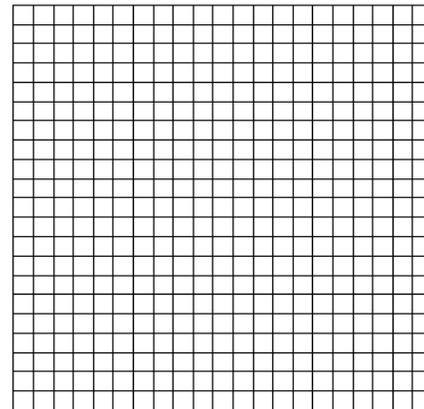
Biology: 1st Semester Final Review

Scientific Method

1. List the steps of the scientific method in order: _____
2. The use of the five senses to gather data is called: _____
3. A possible explanation for a set of observations or a prediction for the outcome of an experiment is called: _____
4. The written record of measurements from a scientific experiment is called: _____
5. A test of a hypothesis is called: _____
6. A _____ uses the results of an experiment to support or reject a hypothesis.
7. The condition that is being tested/manipulated in the experiment is called the _____ variable, and the variable that responds to the changes/the variable that is measured as data is called the _____ variable.
8. The things that stay the same in all of the groups and are not changed are the _____.
9. The group that receives the independent variable is the _____ group, and the group that it is compared to the one that does not receive the independent variable is the _____ group.
10. Which variable do you put on the y-axis? _____.
11. What is the difference between a hypothesis and a theory? _____
12. Graph the following data. The rate of respiration of a freshwater sunfish was determined at different temperatures by counting the number of times the gill covers of the fish opened and closed during 1 minute intervals. Data collected during the experiment is shown in the data table.

Data Table

Temperature (°C)	Gill Cover Opening and Closing Per Minute
10	15
15	25
18	30
20	38
23	60
25	57
27	25



Chemistry

13. The three particles that make up an atom are _____, _____, and _____.
 14. _____ have negative charge, _____ have positive charge, _____ have no charge.
 15. An atom with neutral charge has equal numbers of _____ and _____.
 16. Which particles are found in the nucleus of the atom? _____ and _____.
 17. Which particle is found outside the nucleus of the atom? _____.
 18. The atomic number of an element tells you the number of _____ in each atom of that element.
 19. The atomic mass is the number of _____ plus _____.
 20. Atoms of the same element with different numbers of electrons are called _____.
 21. Atoms of the same element with different numbers of neutrons are called _____.
 22. An atom that gains one electron has a charge of _____. An atom that loses two electrons has a charge of _____.
 23. A substance with pH < 7 is called a (an) _____.
 24. A substance with pH > 7 is called a (an) _____.
 25. A substance with pH = 7 is called _____.
 26. The process that changes one set of chemicals into a different set of chemicals is called a _____.
- Circle the *reactants* in the equation below. Underline the *products* in the equation below.



27. Is the equation above balanced? _____ Explain.
28. _____ speed up reactions in living things by lowering the _____.
29. What 4 factors affect how well an enzyme works?

30. Complete the chart below:

Macromolecule	Building Blocks	Functions	Examples
Carbohydrate			
Protein			
Lipid			
Nucleic Acid			

31. In the space below, draw a nucleotide and label the 3 parts.

Living Things/ Levels of Organization

32. Put the following levels of organization in order from smallest (1) to largest (10):

1	2	3	4	5
biosphere	organism	cell	population	tissue
organ system	molecule	ecosystem	community	organ
6	7	8	9	10

33. The smallest functional unit of living things is a _____

34. A group of atoms is a _____.

35. A group of cells working together is a _____. A group of organs working together is an _____.

36. A group of the same type of organism living in the same place at the same time is a _____.

37. All of the populations living in an area are called a _____.

38. The entire part of Earth in which living things are found is called the _____.

39. List the eight characteristics of living things:

a.	e.
b.	f.
c.	g.
d.	h.

40. List two abiotic factors: _____ and _____.

41. List two biotic factors: _____ and _____.

Food Webs

42. Organisms that make their own food are called _____ or _____.

43. The process by which some organisms use the energy from sunlight to make food is called _____.

44. Organisms that must eat food are called _____ or _____.

45. Organisms that eat only producers are called _____.

46. Organisms that eat only consumers are called _____.

47. Organisms that eat both producers and consumers are called _____.

48. Organisms that break down dead organisms are called _____.

49. a. When one organism catches and eats another organism it is called _____.

b. An insect pollinates a flower, benefiting both the flower and the insect. This relationship is called _____.

c. A barnacle living on a whale is an example of _____ b/c the barnacle benefits and the whale isn't affected.

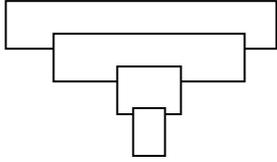
d. Mistletoe growing on a spruce tree, using the spruce tree's water and nutrients is an example of _____.

50. The location where an organism lives is called its _____. An organism's _____ includes what it eats, what eats it, how it reproduces, where it lives, and all of the resources that it needs to live.
51. The main source energy for life on Earth is _____.
52. What type of organisms is always found at the bottom of a food web? _____.
53. Draw a food chain in the space below.

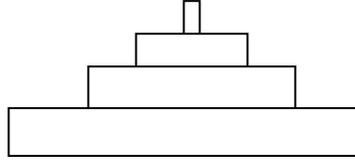
54. The levels in a food web or food chain are called _____ levels. How much energy is transferred from one level to the next? _____ What happens to the rest of the energy? _____

55. The amount of living tissue found at each trophic level in an ecosystem is called _____.

Both pyramids represent the same ecosystem.



Biomass Pyramid

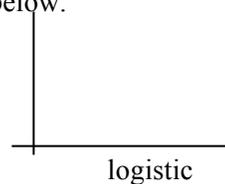
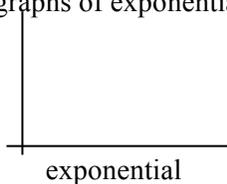


Pyramid of Numbers

56. According to the pyramids, which trophic level includes the largest number of organisms in this ecosystem?
 A. producers B. 1st level consumers C. 2nd level consumers D. 3rd level consumers E. decomposers
57. Based on the pyramids, what can you conclude about the average size of the producers in this ecosystem?
 A. they are large B. they are small C. cannot tell
58. What type of ecosystem could these pyramids represent? _____ Explain. _____

Populations

59. The entire area in which a population is found is called its _____. The number of individual organisms living in a defined area is population _____.
60. When birth rate < death rate, a population's size will _____.
61. Organisms move away from an area in _____. This causes the population's size to _____.
62. Organisms move into an area in _____. This causes the population's size to _____.
63. Sketch graphs of exponential growth and logistic growth on the graphs below.



64. Label the carrying capacity on the appropriate graph above.
65. Which of the two graphs above could be used to depict human population growth over the last 500 years? _____

Biomes/ Nutrient Cycles/ Human Impacts

66. Match the descriptions on the right with the correct biomes on the left.

- | | |
|----------------------------------|---|
| _____ desert | A. warm, tropical temperatures, high rainfall, lots of species |
| _____ tundra | B. low temperatures, little precipitation, high winds |
| _____ temperate deciduous forest | C. variable temperatures, little precipitation, sandy soils |
| _____ boreal forest | D. trees that lose their leaves, mild temperatures, moderate precipitation |
| _____ tropical rainforest | E. trees with needle-like leaves, precipitation mostly snow, low temperatures |
| _____ grassland | F. frequent fires, includes North American prairie, grazing animals |

67. The average temperature and rainfall over a long period of time is called _____. Daily temperature and precipitation is called _____.

68. Water that falls to the Earth as rain or snow is called _____.

69. Water changes from gas (water vapor) to liquid during _____.

70. Water changes from liquid to gas (water vapor) during _____.

71. Water that collects underground is called _____.

72. Water that runs along the surface of the Earth is called _____.

73. _____ must be changed into a different form before plants can use it.

74. Animals breathe in _____ and breathe out _____.

75. Plants take in _____ and release _____.

76. Burning fossil fuels affects the _____ cycle.

77. Cutting down trees _____ the amount of carbon dioxide in the atmosphere.

78. List three processes that release CO₂ into the atmosphere: _____, _____, and _____.

79. Which atmospheric gas must be changed into a different form before plants can use it? _____ . What is the name of the process in which it is changed? _____ . Where does this process take place? _____ .
80. The _____ layer protects us from harmful UV rays from the sun. It is being destroyed by _____ .
81. _____ gases trap heat in the atmosphere, causing the Earth's average temperatures to rise. This process is called _____ . How would life on Earth be different if this process didn't occur at all? _____ .
82. What are humans doing to make it worse? _____ .
83. Acid rain is caused by _____ .
84. Breaking ecosystems into smaller and smaller pieces is called _____ . It is caused by _____ .
85. The accumulation of toxic substances such as DDT in living things is called _____ . This has the greatest effect on organisms in which trophic level? _____ .
86. _____ is caused by humans moving farther and farther out from major cities.
87. Loss of forests is called _____ . It causes soil _____ , habitat _____ , and global _____ .

Cells

88. The invention of _____ led to the discovery of cells.

89. Complete the chart below comparing prokaryotic cells and eukaryotic cells.

	Nucleus?	Cell wall?	Uni- or multicellular?	Examples
Prokaryote				
Eukaryote				

90. List three cell structure differences between plant and animal cells. _____
91. List three organelles involved in the synthesis, modification, and distribution of proteins in a cell. _____

List the cell organelle that

92. contains DNA _____
93. uses energy from sun to make sugars _____
94. contains enzymes to break down toxic substances _____
95. releases energy from food _____
96. regulates what enters and leaves the cell _____
97. organizes the spindle during mitosis _____
98. makes the ribosomes _____
99. In diffusion, molecules move from an area of _____ to an area of _____ . Diffusion of water is called _____ .
100. The cell membrane is called semi-permeable because _____ .
101. Diffusion of molecules through a special protein channel is called _____ .
102. Moving molecules such as hydrogen ions through a special channel from an area of low concentration to an area of high concentration is called _____ because it requires _____ .
103. The solid substance that is dissolved in a solution is called _____ . The liquid it is dissolved in is called _____ .
104. When a cell is placed in fresh water, water will move _____ the cell, eventually causing the cell to _____ . When a cell is placed in salt water, water will move _____ the cell, eventually causing the cell to _____ .
105. Salt placed on grass and other plants causes cells to _____ water.
106. Cells can engulf large food particles during a process called _____ . They release particles in a process called _____ .
107. As a cell grows, its _____ gets larger faster than its _____ .
108. As a result, large cells face two problems: _____ .

109. The cell cycle is divided into two main phases: _____ and _____ . During which phase does the cell grow and prepare to divide? _____ .

110. What is the process of a cell splitting into two called? _____ .

111. Draw a chromosome after DNA replication. Label the sister chromatids and the centromere.

During which phase of mitosis

112. does the spindle form? _____ 115. do the chromosomes line up at the middle? _____
113. do chromosomes condense? _____ 116. do two new nuclei form? _____
114. do the chromatids separate? _____ 117. does the cytoplasm split? _____