Name: _____ /100pts

Period: ___

CRT Review

1. Biology is the study of _____.
2. _____ is the body of knowledge based upon the study of nature.
3. List the eight characteristics of life (Hint: __ O G __ C __ __ __)

   _____, _____, _____

   _____, _____, _____

   _____, _____
4. What is the scientific method used for? (pg. 16)

   _____ _____ & _____ _____
5. Define Hypothesis:
6. Define Independent variable:
7. Define Dependent variable:
8. What are the 5 steps of the scientific method in order? (Hint: ___ H ___ A ___)

   _____, _____, _____

   _____, _____,
9. Ecology is the study of _____.
10. The **Biosphere** is all the area of the earth that supports _____.
11. Provide 3 examples of **abiotic** factors. _____, _____, _____
12. Starting with cell and ending with biosphere, list the 9 levels in Ecology:

    CELL, _____, _____, _____, _____,

    _____, _____, _____, biosphere
13. A **NICHE** is most often defined as an organisms role in the ecosystem, but it also describes how an organisms meets its needs for survival: F_____, S_____ and R_____
14. Define **SYMBIOSIS**: _____

    _____
15. Give an example of **MUTUALISM**:_____

    _____
16. Give an example of **COMMENSALISM**:_____

    _____

17. Give an example of **PARASITISM**: _____

_____

18. Which of the following is the prey of a snake?

a. Hawk b. Berries c. Mouse d. Bigger snakes

19. Which of the following is a predator of snakes? (Circle 2)

a. Hawk b. Berries c. Mouse d. Bigger snakes

20. Autotrophs:

a. get energy from others **b**. get energy on their own **c**. are only herbivores

21. Heterotrophs:

a. get energy from others **b**. get energy on their own **c**. are only herbivores

22. Herbivores eat: a. meat b. both meat and plants c. plants d. None of these

23. Carnivores eat: a. meat b. both meat and plants c. plants d. None of these

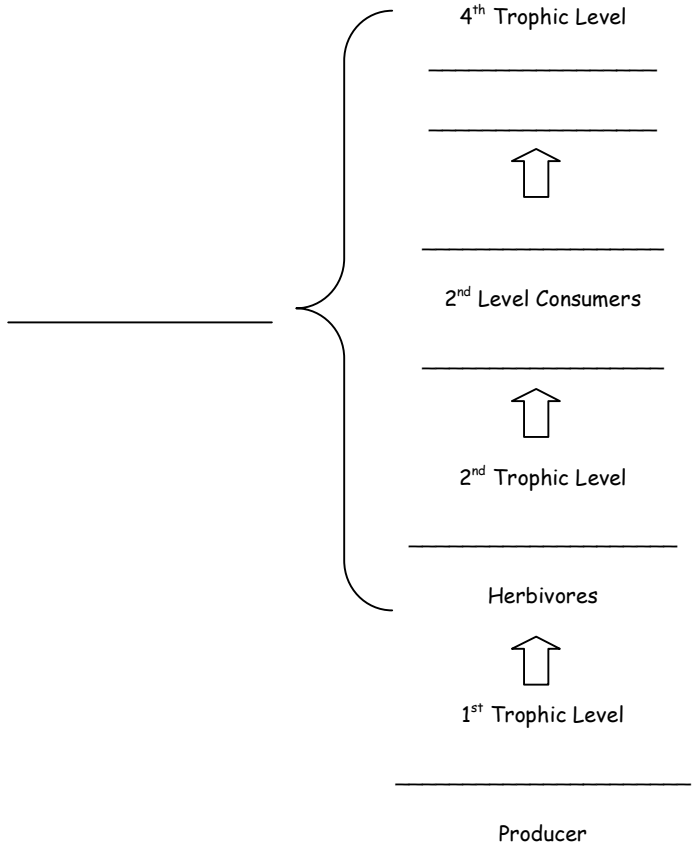
24. Omnivores eat: a. meat b. both meat and plants c. plants d. None of these

25. Detrivores eat: _____

26. Trophic Levels of the Food Chain

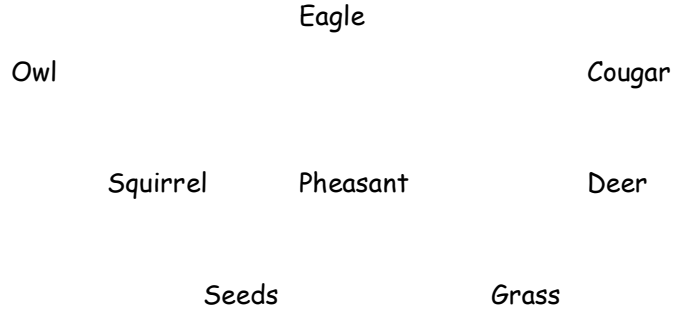
Fill in the blanks with the following words:

- 1st Level Consumer
- Autotrophs
- Top Carnivores
- 3rd Trophic Level
- 3rd Level Consumer
- Heterotrophs
- Omnivores



27. Give an example of a carnivore that is not a top carnivore. _____

28. Complete the food web below by drawing in **10** arrows. Make sure the arrows point in the proper direction (the arrow shows the energy flow and points to the _____).



29. What are the 3 main **biogeochemical cycles**? _____, _____, _____

30. Why do organisms migrate or hibernate? It's about _____.

31. Draw a picture or diagram showing the water cycle and label the following key terms: evaporation, condensation, precipitation. Use arrows in your picture to show the direction that water travels and the cycle.

32. Where does the energy come from the drives the water cycle? _____

33. Draw an energy pyramid with four levels. Be sure to include the amount of energy passed on to each level.

34. What produces the oxygen that we breathe? _____

35. What do animals breath out that is vital to plants? _____

36. Of the 3 cycles, which is currently of major concern to the scientific community and may result in the disappearance of our glaciers and polar ice caps? _____

37. What is a limiting factor? _____

_____ 2 Examples: _____ & _____

38. Using pages 123-126 list at least 4 factors that threaten biodiversity or extinction.

_____, _____, _____, _____

39. All elements or atoms are made of three things. Name them and circle the charge.

_____ + - No charge

_____ + - No charge

_____ + - No charge

40. An **ion** is an atom that has lost or gained one or more _____ and has a charge.

41. pH measures the strengths of _____ and _____ and ranges from 1 to 14. A pH below 7 is _____, while a ph above 7 is _____.

42. **Diffusion** is the net movement of particles from an area of _____ numbers or concentration to an area of _____ numbers or concentration.

43. What 4 elements make up 96% of your body? (Page 149)

_____, _____, _____, _____

44. What are the 4 main macromolecules?

_____, _____, _____, _____

45. What is a **polymer**? _____

_____

46. What three elements make up carbohydrates? (the numbers represent the ratio)

1 _____, 2 _____, 1 _____

47. What are lipids made of?

a. amino acids b. sugars c. fats d. nucleic acids

48. What is DNA and RNA made of?

a. amino acids b. sugars c. fats d. nucleic acids

49. Using the diagram on p 162, list 6 properties of water:

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

50. What are the building blocks of proteins? A_____ A_____

51. A solvent is _____

What is an enzyme, and what is its function? _____

_____

52. A compound light microscope uses _____ lenses to magnify objects.

53. Electron microscopes use _____ to focus beams of electrons onto objects.

54. What was the name of the scientist that discovered and named cells? _____

55. Name the 3 main ideas of the "Cell Theory" (pg 183).

a. _____

b. _____

c. _____

56. What are the two basic cell types? E_____ and P_____

57. Which of the 2 cell types is the oldest and least complex? _____

58. What is the main thing that **Eukaryotes** have that **prokaryotes** do not have?

M_____ B_____ O_____

59. All living organisms are trying to keep a constant and balanced internal environment. This is called H_____ (the "H" of the 8 characteristics of life).
60. What cell structure controls what can enter and leave the cell? P_____ M_____
61. The plasma membrane has S_____ P_____
62. Define **selective permeability**. _____
63. In plants is the cell wall outside or inside of the plasma membrane? INSIDE OUTSIDE
64. Where is DNA located and protected?

    a. Mitochondria b. Cytoplasm c. Nucleus d. Cell Membrane e. None
65. Which of the following have a cell wall? (You can circle more than one!)

    a. Animal Cell b. Bacteria c. Plant Cell d. Human Cells e. None
66. Which organelle is responsible for producing ATP (energy)?

    a. Nucleus b. Vacuole c. Lysosome d. Mitochondria e. None
67. Which organelle(s) is (are) **NOT** found in an animal cell?

    a. Chloroplast b. Vacuole c. Cell Wall d. Lysosome
68. Which of the following is responsible for producing proteins?

    a. Nucleus b. Lysosome c. Ribosome d. Mitochondria e. None
69. Which of the following stores water and minerals in a cell?

    a. Ribosome b. Vacuole c. Golgi Apparatus d. Endoplasmic Reticulum
70. What is the "liquid" area inside a cell called? It is the fluid that the organelles float in.

    a. Nucleus b. Cell membrane c. Lysosome d. Cytoplasm e. None
71. Which of these organelles has digestive enzymes (acids) that break things down?

    a. Lysosome b. Vacuole c. Golgi Apparatus d. Chloroplast e. None
72. Plants have _____ which are organelles that capture sunlight or the sun's energy and produce _____ to store for a later time. (pg. 197)
73. What pigment inside the chloroplast gives plants their green color and help capture the sunlight? _____
74. Both plant and animal cells have a Vacuole, but there is a major difference between them. Explain this difference. _____

    _____
75. What do you call the endoplasmic reticulum with ribosomes attached? _____ ER

76. _____ is the diffusion of water across a selective or semi-permeable membrane.

77. An isotonic solution has

a. more salts than water b. more water than salts

c. equal salts and water d. no salts at all

78. A hypotonic solution has

a. more salts than water b. more water than salts

c. equal salts and water d. no salts at all

79. A hypertonic solution has

a. more salts than water b. more water than salts

c. equal salts and water d. no salts at all

80. Which type of transport requires energy to complete?

a. passive transport b. facilitated diffusion c. active transport d. endocytosis

81. Endocytosis is where stuff **enters / exits** and exocytosis is where stuff **enters / exits.**

82. Name the 3 main phases of the cell cycle (in order).

_____ → _____ → _____

83. G1, S, and G2 are the three stages of which phase?

a. Mitosis b. Cytokinesis c. Interphase d. Meiosis e. None

84. Complete the following table with the 4 stages of mitosis and the one word or phrase that best describes what occurs in each stage.

Stage	**Word or Phrase**
P	First or
M	
A	
T	

85. Define autotroph: _____

86. Define heterotroph: _____

87. _____ _____ is the process where sugars are broken down in the mitochondria to form _____ tri_____ (ATP)

88. Define

a. Anaerobic: _____

b. Aerobic: _____

89. Perform photosynthesis autotrophs heterotrophs

90. Perform cellular respiration: autotrophs hetertrophs

91. How are photosynthesis and cellular respiration related? _____

92. What is the equation for:

a. Photosynthesis: _____ + _____ → _____ + _____

b. Cellular Respiration: _____ + _____ → _____ + _____

93. Genetics is the study of _____ (don't say GENES).

94. Sex cells are called _____. In animals they are the _____ and _____. In plants they are the _____ and _____

95. Define and give an example of a **hybrid.** _____

_____

96. What is the opposite of a Dominant trait? _____

97. _____ _____ is the father of genetics. He studied what type of plant? _____

98. Explain the law of segregation. _____

_____

99. Explain the law of independent assortment. _____

_____

100. During what process does segregation occur? _____

101. What are the 2 primary differences between meiosis and mitosis?

a. _____

b. _____

102. Which of the following could be an example of incomplete dominance?

a. Cat with both black and white hair
b. Cat with only Black hair
c. Cat with only gray hair
d. None of these.

103. Who decides the sex of the child, mother or father? Why? _____

_____

104. Humans have _____ chromosomes that make up _____ pairs.

105. Type of reproduction that involves meiosis? _____

106. Type of reproduction that produces an identical offspring to the parent? _____

107. Type of reproduction that utilizes mitosis, and not meiosis? _____

108. Type of reproduction that involves the joining of 2 gametes? _____

109. Give an example of a sex linked trait: _____

110. Male / Females are more likely to exhibit a sex linked trait. (Circle one.)

111. Using the letters "T" and "t", and Tall being dominant and short recessive answer the following questions.

What is the **genotype** for Homozygous Dominant? _____ Phenotype? _____

Homozygous Recessive? _____ Phenotype? _____

Heterozygous? _____ Phenotype? _____

Complete the following cross:

Phenotype	Homozygous Recessive	X	Heterozygous
Genotype	_____	X	_____
Gametes	____ ____	X	____ ____

Punnet Square

Offspring Genotypes ____ ____ ____ ____

Genotypic Ratio:

Phenotypic Ratio:

What is the probability that an offspring will be Tall? _____% Short? ____%

What is the probability of an offspring being homozygous recessive? ____%

112. Use page 299 to help you draw a pedigree chart after reading the following paragraph.

Freckles are a recessive trait. The father has them but the mother does not. They have 4 children in this order: Boy with freckles, Boy no freckles, Girl no freckles, and Boy with

freckles. The Girl has 2 children: one boy with freckles, and a girl no freckles. The last boy has 3 girls who all have freckles.

113. Which organelle holds the DNA of an animal cell? _____

114. DNA is made of 4 nucleotides, name them.

_____, _____, _____, _____

115. What is transcription? _____

_____

116. A mutation is a change or mistake in the _____

117. Name at least 3 causes of mutations? _____,

_____, _____

118. Draw a simple picture of DNA. Pair the bases appropriately.

119. Why does a cell need to replicate its DNA? _____

_____

120. The information in DNA is used to make _____. These _____ make up an organism's _____.

121. Who won the Nobel Prize for discovering the structure of DNA? _____ &

_____.

122. The men in the above question took data from _____ to complete their model.

123. Define evolution: _____ _____ _____or generations

124. Who contributed most to the theory of evolution? _____

125. Name at least three things that connect Genetics to Evolution.

_____, _____, _____

126. What is the scientific term for survival of the fittest?

a. Artificial Selection b. Natural Selection c. Adaptation d. Mutation

127. In natural selection the _____ _____ dictate which organisms will survive.

128. Define genetic variability: _____

_____

129. Organisms with more / less genetic variability have more potential to adapt to changing environments.

130. Who would use selective breeding? _____

131. List 4 evidences for evolution: _____, _____

_____, _____

132. _____ _____ gives each species a two-part scientific name. A _____ _____ is a classification tool.

133. Lists the taxa from broadest to most specific.

134. A _____ is the most closely-related group of species that share a common ancestor.

135. Bears, humans, and birds all belong to the kingdom _____.

136. Key out each of the following items:

a. Pen OBJECT ___

b. Highlighter OBJECT ___

c. Paper clip OBJECT ___

d. Pencil OBJECT ___

e. Pencil sharpener OBJECT ___

1. a. long, tubular object.....go to #2
   b. short, non-tubular object.....go to #4
2. a. constructed from plastic.....go to #3
   b. not constructed from plastic.....OBJECT 1
3. a. yellow tip.....OBJECT 2
   b. writes in blue.....OBJECT 3
4. a. black & sliver.....OBJECT 4
   b. silver.....OBJECT 5