Biology   Name: _____
Final Exam Review 2017
                                                Date: _____   Hour: _____

1. What does the information in a gene code for? _____

    _____
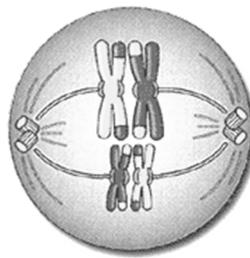
2. What is the purpose of meiosis? _____

    _____

3. How is genetic information passed from parents to offspring? _____

    _____

4. What phase is shown in the diagram below? _____

5. Does the diagram above show a haploid or diploid cell? Explain your answer: _____

    _____

6. What event during Prophase I results in genetic variation in the daughter cells and therefore
    also in the next generation of organisms?

    _____

7. How many chromosomes are found in human body cells? _____

8. Define gene: _____

    _____

9. Describe the function of DNA and what it is stores: _____

    _____

10. How do genes appear in the cell (single, double, etc)? _____

11. Describe the process of synapsis in a cell: _____

    _____

12. What types of cells in the body would be classified as haploid gametes? _____

_____

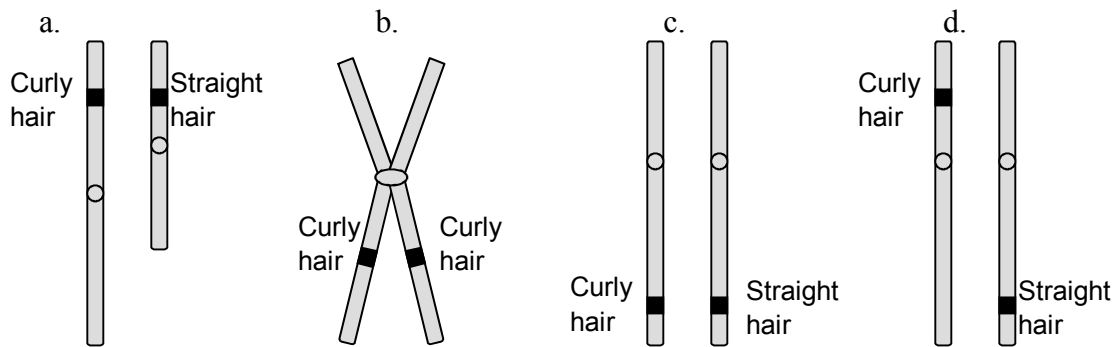13. In which Meiosis I phase does crossover occur frequently?   _____

14. When there are two different alleles present for a gene, the phenotype that is expressed is called by what name?

_____

15. State Mendel's Law of Independent Assortment: _____

_____

16. State Mendel's Law of Segregation: _____

_____

17. A dog's ability to bark is a genetic trait. A dog that is homozygous for the barking trait mates with a dog that is homozygous for the non-barking trait. All the puppies are heterozygous and can bark. Which trait is dominant? Explain your answer.

_____

_____

18. Which diagram below shows a pair of homologous chromosomes with heterozygous alleles for a trait?

a.   b.   c.   d.

Curly hair   Straight hair

Curly hair   Curly hair

Curly hair   Straight hair

Curly hair   Straight hair

19. What do the spaces on the top and left sides (marked with **?**) of a Punnett Square represent?

_____   **?**   **?**

?

?

20. If a black guinea pig (Bb) were crossed with a white guinea pig (bb), what would be the resulting phenotypic ratio of the offspring? Show a Punnet square to explain your answer.

_____

_____

21. Define allele: _____

22. What do the boxes (marked with **?**) of a Punnett Square represent? _____

_____

?	?
?	?

23. Recessive traits are shown with what combination of letters? _____

24. Define phenotype: _____

_____

25. A model used to predict offspring genotypes from parents is called a(n): _____

26. Describe the difference between a monohybrid cross and a dihybrid cross: _____

_____

_____

27. How is a homozygous trait written? _____

28. A flower grower crosses homozygous red snapdragons with homozygous white snapdragons. All of the offspring have pink flowers. This trait follows what pattern of inheritance?

_____

29. If both parents carry the recessive allele that causes cystic fibrosis, the chance that their child will develop the disease is considered to be what percent? Use a Punnet square to explain your answer:

_____

_____

30. What gender is most likely to be affected by a sex-linked trait? _____

Use the following information to answer questions #31-33. A couple gets married and decides to have kids. Dad has the genotype AO for blood type. Mom has the genotype AB for blood type.

	A	O
A	AA	AO
B	AB	BO

31. What is Dad's phenotype? _____

32. What is Mom's phenotype? _____

33. What are the possible genotypes of their children? _____

34. When reading a pedigree a ■ represents an _____ and a □ represents an _____.

35. A phenotype that is dominant must have how many dominant alleles? _____

36. An organism with the genotype DD for a trait is _____.

37. Each organism has a unique combination of traits encoded in molecules called this: _____

38. The primary function of DNA is to: _____

_____

Phosphate group → ◯

Nitrogen base

Sugar
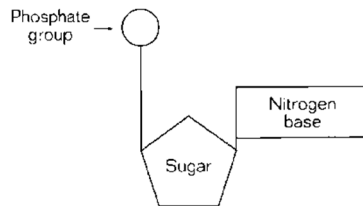
39. Refer to the illustration above. The entire molecule shown in the diagram is called a(n):

_____

40. Write the correct base pairings for a molecule of DNA: _____

_____

41. What is the chemical name for DNA? _____

42. Describe a cell mutation and its effects: _____

_____

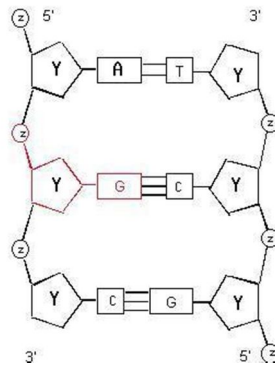43. This type of mutation occurs when a single base or group of bases is switched for a new base or group of bases:

_____

44. A mutation in which a nucleotide is lost in the DNA sequence is called a(n): _____

45. Define cancer: _____

_____

Use the diagram below to answer questions #46-48.

46. The structures labeled Y in the diagram are the: _____

47. The structures labeled Z in the diagram are the: _____

48. The structures labeled A, T, C, and G in the diagram are the: _____

49. What types of cells will pass along mutations to future generations? _____

50. What types of cells will not pass along mutations to future generations? _____

51. Describe where you can find RNA in a cell (include the names of the organelles): _____

_____

52. What does it mean to have a high fitness in terms of evolution? _____

_____

53. Describe vestigial structures: _____

_____

54. What is another name for natural selection? _____

55. In Biology, what is adaptation? _____

56. What is the fossil record? What does it help prove? _____

_____

57. What types of conditions could cause evolution to take place? _____

_____

58. Does a population evolve over time or a single organism? Explain your answer: _____

_____

59. Describe artificial selection: _____

_____

60. Define a mutation: _____

61. How does speciation relate to evolution? _____

_____

62. What is geographic isolation? _____

_____

63. What is reproductive isolation? Give an example: _____

_____

64. What is Ecology? _____

_____

65. A group of organisms of the same species, in the same area, at the same time is called what type of group?

_____

66. An ecosystem involves what two parts? _____

67. When a bear eats a fish, the bear is the _____ and the fish is the _____.

68. Lichens are algae plus fungi. Algae make food for fungi and the fungi give the algae a place to live. This is an example of what type of relationship?

_____

69. What is the ultimate source of energy for all organisms? _____

Observe the **energy pyramid** below and then use it to answer questions 70-73.
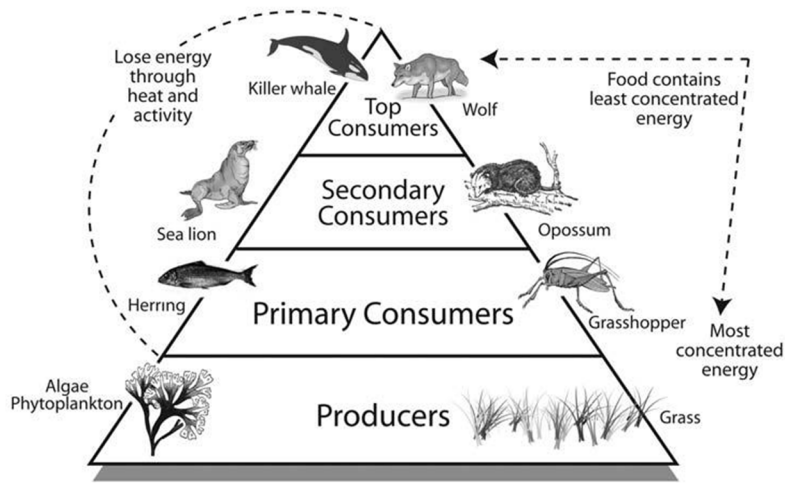
70. What is another term for the bottom level of the pyramid? _____

71. The **group of animals** in the whole pyramid is an example of a(n): _____
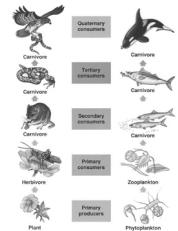
72. In the pyramid, which level has the least number of organisms? _____

73. In the pyramid, which level has the most number of organisms? _____

74. In the **diagram** to the right, each step in a food chain or food web
    is called a:

_____

75. This consumer eats fragments of dead matter: _____

76. What is the name of an organism that gets its energy from consuming other organisms?
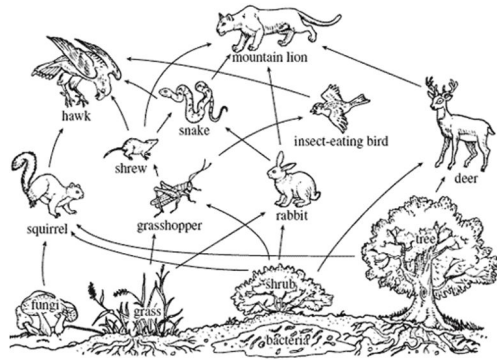
_____

77. Which of the following would be the easiest way to diagram predatory and parasitic
    relationships between several species – a food web or pyramid? Explain you answer:

_____

_____

78. Approximately, how much energy is lost at each trophic level as you go up in the ecological
    pyramid?

_____

79. The **above diagram** represents a: _____

80. Study the **diagram to the right.** If humans aggressively hunted and eliminated most of the opossums (secondary consumers) from the ecosystem, infer (figure out) the **effect on the numbers of organisms** at the primary consumer level.
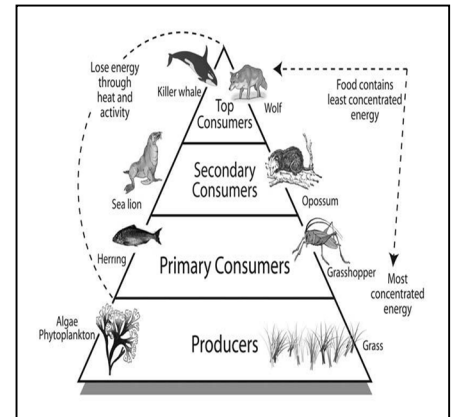
_____

_____

_____

_____

81.   What is the difference between spatial distribution and population density? _____
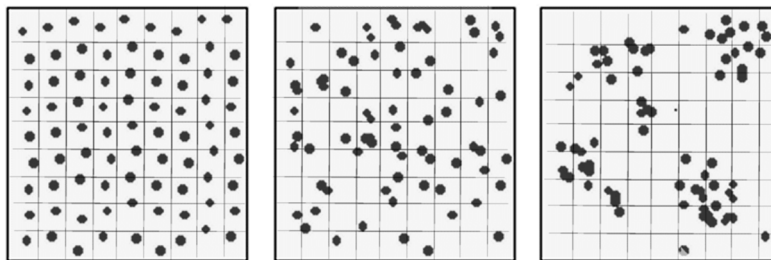
_____

_____

82.   Below are three graphs. The **middle** graph best describes which distribution pattern?
   a. Uniform   b. Scattered   c. Random   d. Clumped groups

83. Young adult male chimpanzees look for mates outside their own population. The males then take the females back to their group. How does this show emigration?

_____

_____

84. What is the difference between natality and immigration? _____

_____

_____

85. A population's emigration in one month totaled 3 individuals. During the same period, immigration was 17 individuals. Natality was 12 and mortality was 26 due to a parasite infection. What was the overall effect on the population size?

_____

_____

86. To assess a population's growth rate, an ecologist must know how many individuals are born, how many died, and how many move away in a given period of time. What else must an ecologist know?

_____

_____

87. The human population has grown exponentially over the last few centuries due to what factors?

_____

_____

_____