Science 10 Unit 7 Worksheet

Chapter 15, Part 1.

1. Briefly describe the three main parts of cell theory:

2. The development of _____ revolutionized the _____ of life.

3. Individual cells need to take in _____ to build and _____ itself. Before food can be used by cells it need to be _____ by digestion.

4. Cells possess structures which are _____ to carry out a variety of different _____ vital to the _____ of the cell.

5. All cells are surrounded by a _____ covering called a _____.

6. Most plant and animal cells have a _____ which appears as _____. The rest of the material inside the membrane but outside the nucleus is called _____.

7. Scattered through out the cytoplasm are small structures called _____ which serve a variety of functions. One example is the _____, as seen in figure 15.2.

8. Plant cells have structures like the _____ which are not found in animal cells. It is a non-living layer that lies _____ the cell membrane. Plants also have _____.

9. The purpose and functions of cell structure fall into three categories:

10. Read figure 15.3 and 15.4 on page 332 & 333 and make a sketch of a typical plant cell.

Part 2.

11. Read the career panel about *Cytotechnologists* on page 335.

12. Cells require processes to bring _____ in to the cell and transport _____ out.

13. Plant cell walls are made of _____ making the cell rigid and thicker than a cell membrane. It also contains pores large enough to let _____ pass back and forth.

14. A _____ in plants and animals is more _____ made of proteins and fats. It lets useful substances in and keeps _____ substances out of a healthy cell.

15. A membrane is said to be _____ and lets small molecules of _____, _____, and _____ pass through. Other molecules are transported _____ the membrane by special _____ embedded in the membrane.

16. _____ is the movement of molecules from an area of high concentration to an area of _____ by moving through the pores of a membrane.

17. What is the Kinetic Molecular Theory of matter?

18. Substances that a cell _____ will usually be found in low _____ within the cell. Needed molecules will diffuse across the membrane until they are _____on both sides.

19. The _____by which _____ moves across a cell membrane is called _____.

20. Explain the difference between Diffusion and Osmosis:

21. The _____ of water movement depends entirely on the _____ concentration of water _____ and _____ the cell.

22. In nature, animals in fresh water face problems in times of evaporation and heat. Also when large amounts of rain fall it affects the concentration of water inside their cells. Plant cells can store _____ and _____ products in their _____ until the cell can use them. When the concentration of water is _____ in the cell than the surrounding environment, water enters the cell by _____ causing the plant to swell. Once the _____ has swollen so far, the internal pressure _____ the movement of water into the cell.

Part 3.

23. Plants _____ their own energy-rich compounds by the process of _____.

24. Photosynthesis occurs in the _____. The organelles contain _____ which give plants their _____ colour. Chlorophyll _____ sunlight and _____ it into chemical _____.

25. Write the equations which represent the process of photosynthesis:

26. Plants use _____ as a supply of energy for the cell's life functions. Glucose molecules when joined together can make _____. Since they are too big to escape through the cell membrane, _____ can be stored and later broken down as needed.

27. _____ are not capable of photosynthesis. They get their energy from energy-rich compounds by eating _____ or other animals during the process of _____.

28. _____, like photosynthesis takes place within cells. During cellular respiration, _____ is used and _____ is broken down resulting in the release of _____ , _____, and _____.

29. Write down the equation to describe cellular respiration:

30. Most of the processed that take place occur in organelles called _____. These are found in _____ and _____ cells to extract _____ from glucose.

31. To provides cells with energy, organisms must have a supply of _____ from the air.

32. _____ is the major supplier of _____ . Photosynthesis requires _____ , which is a byproduct of respiration, as a reactant. A complete cycle!

33. The trees and plants of the _____ produce large amounts of _____.

Part 4.

34. The _____ regulates a cell's _____ so that it can survive. Most of a cell's activities consist of _____. These may result in _____ or _____ of damaged organelles, or supplying _____ to the cell.

35. What three things do a cell's reactions depend upon?

36. The _____ which help speed up chemical reactions in cells are made of _____.

37. Enzymes are very _____ to a type of reaction. The _____ controls enzyme production.

38. The _____ controls the passage of materials between the nucleus and the cytoplasm. Within the nucleus is _____ which gives the organism its specific _____.

39. Each of an organism's DNA molecules is part of a different _____. These are long _____ structures made of DNA and a variety of _____.

40. Different organisms have different _____of chromosomes, but the same for each _____.

41. _____ and _____ discovered the details of DNA _____. Scientists discovered that DNA consists of smaller molecules called _____. There are _____ types of nucleotides distinguished by their bases: _____

42. Scientist _____ X-rayed DNA and discover that it was coil or _____ shaped. _____ and _____ proposed that the DNA molecule was a _____.

43. A series of nucleotides along the DNA ladder make up a _____ which is coded by the four different _____. The _____ and _____ make up the genetic code.

44. Many genes are _____ calling for the production of specific enzymes and other proteins needed by the cell. The _____ alphabet consists of _____ four letters.

Part 5.

45. Each cell in your body started life as an _____ cell. As it developed features that made it into a skin or muscle cell, it became a _____ cell.

46. One example of a single cell organism are the _____. Some help living things and are ecology because they form a part of the _____ in rivers, lakes, and the oceans.

47. Some protists are not beneficial and cause _____ in humans and animals like _____. Many thousands of people _____ from diseases like malaria from _____.

48. _____ are the smallest and simplest forms of life on earth. Bacteria do not have _____ or most of the organelles found in other single cell plants or animals.

49. Bacteria do not have _____, they just have _____ or circular DNA.

50. Briefly describe the benefits and uses of bacteria to humans:

51. Bacteria, protists, and other agents that cause disease are called _____.

52. Bacteria cause disease by _____ the bodies and cells of organisms and _____ with normal cell functions. Once infected, _____ may be used to kill or control them.

53. Many _____ have special molecules called _____ outer on their surface. The antigens stimulate your body to produce _____ which may kill or slow disease.

54. _____ are designed to make use of your own defence system in order to treat bacterial diseases. Weak or _____ pathogens produce mild symptoms which a healthy person can fight off. _____ remain in your body to fight of the next occurrence of the pathogen.

55. What diseases can be controlled by vaccine? _____

56. Scientists believe that _____ do not have most of the features of living cells, but they can _____ once they invade a host cell and use its enzymes and DNA.

57. Viruses are ____ to ____ times smaller than bacteria and consist of piece of _____ covered by a protective coat of _____. List several viruses in the space below:

58. Briefly describe how viruses reproduce and cause disease:

59. Read figures 15.23, 15.24, and 15.25 on pages 348/9. Compare and contrast bacteria to viruses.

60. Organisms, such as _____ , that spread diseases when they bite are called _____ . The best way to prevent viral disease is by _____.

61. _____ are infections that are usually passed from one person to another via sexual activity of one type or another. There are more than _____ STDs.

62. List some precautions and ways to protect yourself from STDs:

63. Read the *Science in our world* panel on page 351. Copy the table of common STDs below.

Part 6.

64. Nutrients and wastes enter and leave the cell by _____ and _____. These processes take place across the _____ at a certain rate. As the cell gets bigger and more products pass through its surface area, the surface area stays the same size _____ to the its _____. Cells can only reach a _____.

Chapter 16, Part 7.

65. New cells appear when existing cells _____ in two, this is called _____. Since a cell can only grow so _____ for its surface area, more cells must be grown.

66. Cell reproduction allows organisms to _____ calls that die. Cells also have a _____ _____ made up of phases. These are called the _____.

67. The growth phase of a cell is called _____. This when _____ and raw materials form the _____ and the cell membrane is _____.

68. Before a cell can divide, a new set of _____ must be made by copying the ones already present in the _____. Duplicate chromosomes attach to each other in the region called the _____, and the duplicates are called _____.

69. The next phase of the cell is _____ which begins with _____. Here the paired chromatids separate and move to _____ ends of the cell.

70. Next the organelles divided into _____ in the process of _____. Cell reproduction = _____ + _____ I.E Daughter cells!

71. Mitosis is made up of _____ stages which occur in a _____. Study the stages of mitosis and cytokinesis shown in figure 16.4. on page 358.

72. Briefly describe the four phases of Mitosis:

73. Cytokinesis is the _____ of material _____ the nucleus of a cell. After cytokinesis, each _____starts out with _____ of the organelles and _____ as the parent. It will eventually reach the size of the parent cell.

74. Study figures 16.5 and 16.6 on page 360. Diagram the two major stages of a cell's life cycle.

75. As an organism gets _____, its rate of cell reproduction _____. The slower the rate of cell reproduction, the more that you _____ and gradually _____.

76. Sometimes cells reproduce too _____ because the DNA is damaged and the nucleus loses control of _____. This causes _____ and growths called _____. The type of damage to DNA that results in _____ is caused by _____.

77. _____ are substances or _____ which cause mutations in the genetic code.

78. Describe several common forms of mutagens and ways to reduce the risk of becoming sick:

79. Read the profile about Dr. Julia Levy on page 363. What is her contribution to cancer research?

Part 8.

80. Describe the three features of asexual reproduction in cells and single cell organisms:

81. There are several major methods of _____ where the parent's DNA is first _____ and then _____ between the offspring.

82. One method is _____. Here the organism _____ in to equal sized off-spring. Binary fission is the usual method for _____ and _____.

83. Another method is _____ where the off-spring starts as a _____ and results in the _____ division. It occurs in _____ and some plants & animals.

84. Next is _____, slightly different because they are _____ types of cells having a nucleus, _____, and a _____ like _____.

85. Also, the process of _____ results in new organisms breaking off the parent. This produces off-spring which are _____ just like _____ and _____.

86. _____ only occurs in plants and is seen in seeds, stems, grasses and ferns.

87. The name for identical off-spring produced by one parent asexually is called a _____.

Part 9.

88. _____ requires two parents and the off-spring are not _____.

89. Sexual reproduction _____ the formation of _____ cells for reproduction.

90. A _____ is a picture of the set of chromosomes possessed by an individual.

There are _____ pairs or _____chromosomes in humans. Cell containing pairs of _____ (Similar) chromosomes are said to be _____.

91. Read figure 16.16 on page 368. Sketch a the diagrams for asexual and sexual reproduction.

92. In sexual reproduction, both _____ provide chromosomes in the form of _____ which contain only _____ of the chromosomes from the parent's body cells. This results in only one _____set of chromosomes.

93. The special reproductive cells are called _____ and have only _____set of each type of chromosome. These are said to be _____

94. The production of haploid gametes requires a special type of cell division. The material in the _____ divides first into half, this is called _____. Then the cell cytoplasm divides by _____

95. Meiosis consists of _____ parts, _____ and _____. Each part is divided into _____ stages: _____

96. Before meiosis starts, during _____ the chromosomes duplicate and form _____. Meiosis I _____ the number of chromosomes and Meiosis II _____ separates the pair of chromatids.

97. After the _____ divides, _____ daughter cells have been produced from the parent. Each of the four cells is a _____ gamete or a reproductive sex cell.

98. Sketch and study the process of meiosis in figure 16.19 on page 370 & 371 on a separate sheet. Be sure to indicate Meiosis I and II, and the four stages in each. Record only the most important events from each stage to keep your explanation simple.

99. Two _____ must join together to form a new organism. The mature male gamete is called the _____. The larger female gamete is called the _____. When they successfully unite the process is called _____.

100. Fertilization has _____ steps. When the sperm _____ the ovum, they fuse to make a single _____ cell called a _____. Then the zygote begins to divide by _____ and form the new _____.

101. Read figure 16.18 on page 369. Study about how diploid parents result in diploid offspring.

102. Some organisms produce both _____ and _____ gametes like _____. Even though they _____ fertilize their own gametes. Most types of animals produce only _____ type of gamete, but may do so _____ or _____.

103. Embryo development occurs differently in different _____. Sometimes it is from within the body or from inside a _____ and yolk sac, which eventually _____.