S7L2. Students will describe the structure and function of cells, tissues, organs, and organ systems.

**Cell Processes Study Guide - Ch. 3**

1. What are the two types of cell transport? (moving substances through the cell) **ACTIVE** and **PASSIVE**

2. Which type of transport does NOT require any energy? **PASSIVE**

3. What is the difference between diffusion and osmosis? **Osmosis moves water**

4. What are the two types of Active Transport? **endocytosis** and **exocytosis**

5. What type of active transport *takes in* or engulfs substances by surrounding it? **endocytosis**

6. What type of active transport *gets rid of* a substance? **exocytosis**

7. What is homeostasis? ____________

8. What is the name of the process that a cell uses to capture energy in sunlight and use it to make food? **photosynthesis**

9. Does grass get its energy directly or indirectly from the sun? **directly**

10. Does a cow get its energy directly or indirectly from the sun? **indirectly**

11. What is an autotroph? Give an example: **an organism that can make its own food**

12. What is a heterotroph? Give an example: **an organism that cannot make its own food**

13. What is the chemical formula for photosynthesis? **(6H₂O + 6CO₂ → C₆H₁₂O₆ + 6O₂)**

14. In which stage during photosynthesis does the cell capture energy from sunlight? **1st Stage**
15. Which organelles are used to capture the energy from the sun?  

chloroplasts

16. What are the two "raw" materials of photosynthesis?

carbon dioxide and water

17. What organelle is used to change the "raw" materials into food for the plant?  

chloroplasts

18. What are the products of photosynthesis?

oxygen and sugar (glucose)

19. How does carbon dioxide and oxygen leave the plant?

through the stomata

20. What is the opposite of photosynthesis?

cellular respiration

21. What is the chemical formula for cellular respiration?

C₆H₁₂O₆ + 6O₂ → 6H₂O + 6CO₂

22. What are the "raw" materials for respiration?

oxygen and glucose (sugar)

23. Where does the energy come from for respiration?

glucose

24. Cellular respiration takes place inside the

cell

25. The first time glucose is broken down is inside what organelle?

cytoplasm

26. The second time, using oxygen and energy, the glucose is broken down inside the

mitochondria

27. What are the products of cellular respiration?

carbon dioxide and water

28. When cells obtain energy WITHOUT the use of oxygen it is called

fermentation

29. Bakers and brewers use this product to help fermentation:

yeast

30. Alcohol is a product of the above type of fermentation.
31. When your muscles use up their oxygen and the cells supply oxygen to the muscles, this is called ________________ fermentation.

32. What is the sugar called that most plants produce? ________________

33. Why are carbohydrates important for you to eat? ________________

34. What is asexual reproduction? ________________

35. What is sexual reproduction? ________________

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<table>
<thead>
<tr>
<th>Cycle: The Cell Cycle or Mitosis?</th>
<th>Phase:</th>
<th>What is happening?</th>
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<tbody>
<tr>
<td>cell cycle</td>
<td>37. Interphase</td>
<td>38. Cell prepares for division; DNA replicates, organelles replicate; cell increases in size</td>
</tr>
<tr>
<td>mitosis</td>
<td>40. Prophase</td>
<td>41. Cell prepares for nuclear division; packages DNA into chromosomes</td>
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<tr>
<td>mitosis</td>
<td>43. Metaphase</td>
<td>44. Cell prepares chromosomes for division; chromosomes line up in middle; spindle fibers attach from daughter cells to chromosomes at the centromere</td>
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<tr>
<td>mitosis</td>
<td>46. Anaphase</td>
<td>47. Chromosomes divide; spindle fibers pull chromosomes apart; ½ of chromosome or chromatid move to each daughter cell</td>
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<tr>
<td>mitosis</td>
<td>49. Telophase</td>
<td>50. Cytoplasm divides; DNA spreads out; two nuclei form</td>
</tr>
<tr>
<td>cell cycle</td>
<td>52. Cytokinesis</td>
<td>53. Cell membrane pinches in to form the two new daughter cells</td>
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Part 2: Describe the following terms.

54. Chromatid: one of the two arms of a chromosome

55. Chromosome: double strand of coiled up chromatin

56. Centromere: what holds the sister chromatids together

57. DNA: nucleic acid that contains the instructions for making cells & proteins

58. Nucleus: control center of the cell

59. Centriole: small organelle that produces spindle fibers

60. Spindle Fibers: manuver the chromosomes so that each new cell has the correct number

61. Haploid: a sex cell w/ half the normal chromosome #.

62. Diploid: body cells that have the normal number of chromosomes.

63. What is the difference between the cell cycle and mitosis?
   Cell cycle is the regular pattern of growth and division a cell goes through. Mitosis is a part of the cell cycle during which time the nucleus divides.

64. What is the difference between mitosis and meiosis?
   Mitosis is cell reproduction that creates two daughter cells identical to the original cell. Meiosis is when a cell in the ovary or testicles divides twice to make 4 haploid sex cells.