

NAME: _____ DATE: _____ HOUR: _____

REVIEW GUIDE – CH. 8 – CELLULAR ENERGY

*****In addition to this review, you are responsible for knowing the information in your notes and on any worksheets and labs. Refer to the textbook in more in-depth information is needed.*****

CH. 8.1: How Organisms Obtain Energy**1. Vocabulary – Define the following terms:**

- a. energy –
- b. autotroph –
- c. heterotroph –
- d. metabolism –
- e. ATP –

1. An example of an autotroph would be a(n) _____.
2. An example of a heterotroph would be a(n) _____.
3. What happens to the amount of **usable** energy when it is converted from one form to another?
4. As you go up a level in a food chain/energy pyramid (from the plant level to the herbivore level) what happens to the amount of **unusable** energy?
5. When chemical bonds are created energy is _____.
6. When chemical bonds are broken energy is _____.
7. The ultimate source of energy for living things is _____.
8. Why is ATP important?
9. Draw a simple diagram of an ATP molecule. Label the location of the high-energy bond.

CH 8.2: Photosynthesis

10. What is the CHEMICAL equation for photosynthesis?

- a. What are the reactants?
- b. What are the products?

11. LABEL the diagram of the chloroplast. Include these structures: membrane, grana (granum), thylakoid, and stroma.



12. In photosynthesis, _____ energy is converted to _____ energy.

13. List the 4 requirements for photosynthesis.

14. What is chlorophyll?

- a. In what structure is it found (be specific)? _____.
- b. What does it do? _____.

Phase I: Light-Dependent Reactions

15. What is the other name for the light-dependent reactions?

16. Summarize the steps of the light reactions by completing the table below.

What goes in (reactants)		What comes out (products)
	Electron Transport Chain in the thylakoid	

17. What happens to H₂O (water) during this process?
18. Where does the O₂ (oxygen) come from?
19. During the light reactions of photosynthesis _____ energy is converted into _____ energy (short-term storage).

Phase 2: The Calvin Cycle

20. What are the other names for the Calvin cycle?
21. Summarize the steps of the Calvin cycle by completing the table below.

What goes in (reactants)	The Calvin cycle in the stroma	What comes out (products)

22. What happens to CO₂ (carbon dioxide) during this process?
23. During the Calvin cycle of photosynthesis (circle one) **short-term / long-term** chemical energy in the form of ATP and NADPH is converted into (circle one) **short-term / long-term** chemical energy in the form of glucose.

CH 8.3: Cellular Respiration

24. Write the CHEMICAL equation for cellular respiration.
- a. What are the reactants?
- b. What are the products?
25. How is this chemical equation similar to the chemical equation for photosynthesis?
- a. How are these equations different?

26. Summarize the steps of glycolysis by completing the table below.

What goes in (reactants)		What comes out (products)
	Glycolysis Takes place in the _____	

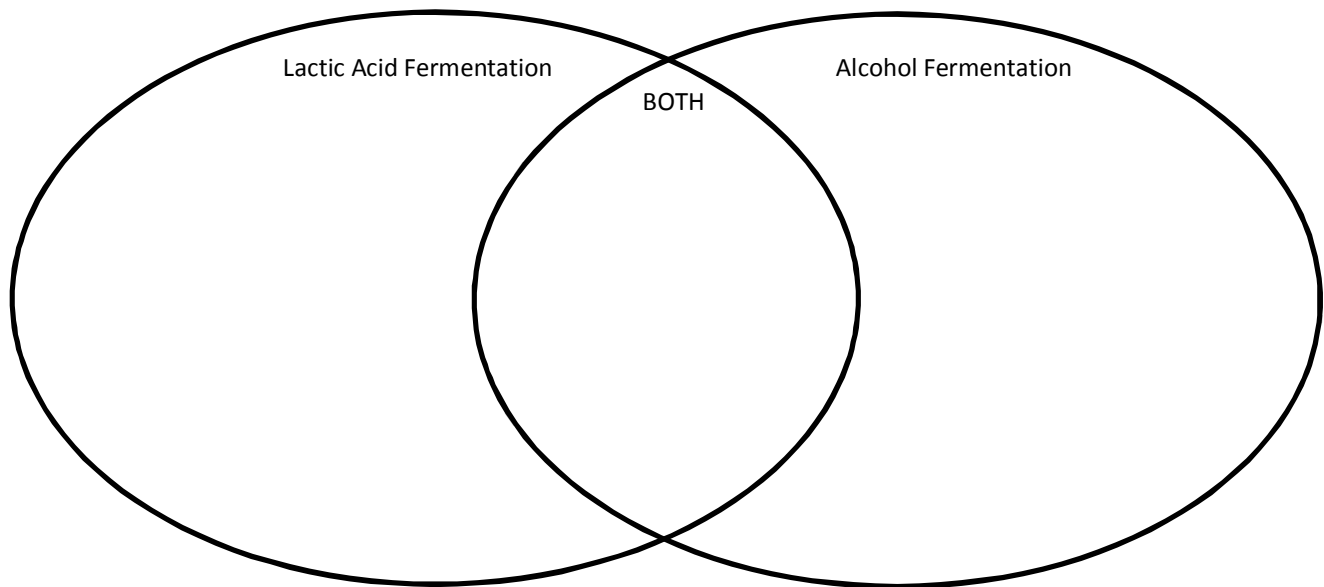
27. Define the following terms:

- a. aerobic:
- b. anaerobic:

Anaerobic Respiration

28. Another name for anaerobic cellular respiration is _____.

29. Compare and contrast the two types of fermentation by filling in the Venn diagram below.



30. Which type of fermentation is responsible for muscle cramps, cheese, and yogurt?

31. Which type of fermentation is responsible for bread and other baked goods rising?

Aerobic Respiration

32. Where does aerobic respiration occur in the cell?

33. Summarize the steps of Krebs cycle by completing the table below.

What goes in (reactants)		What comes out (products)
	Krebs cycle Takes place in the _____	

34. Another name for the Krebs cycle is _____.

35. LABEL the diagram of the mitochondria. Include these structures: outer membrane, inner membrane, and mitochondrial matrix.



36. Which type of cellular respiration is more efficient, anaerobic or aerobic? Explain.

37. How are the processes of photosynthesis and cellular respiration related?