WLHS / Biology/Oppelt Name_____Date_____Per_____

Cellular Respiration – Section 9.1Reading Guide (pages 250-253)

A. Section 9.1 Cellular Respiration: An Overview (p. 250)

Chemical Energy and Food

1) a. How do autotrophs get their food? _____

b. How do heterotrophs get their food? _____

2) Define **CALORIE**: _____

3) a. How many calories of heat are released when 1 gram of sugar (glucose) is burned? _____

b. How many calories of heat are released when 1 gram of triglyceride fats are burned? _____

c. How many times more energy does fat have compared to sugar? _____

Analyzing Data: You are what you eat (page 251)

Organisms get energy from the food they eat, but the energy contained in foods varies greatly. Most foods contain a combination of proteins, carbohydrates, and fats. One gram of protein or carbohydrate such as glucose contains roughly 4 Calories. One gram of fat, however, contains about 9 Calories. The accompanying table shows the approximate composition of one serving of some common foods.

Composition of Some Common Foods			
Food	**Protein (g)**	**Carbohydrate (g)**	**Fat (g)**
Apple, 1 medium	0	22	0
Bacon, 2 slices	5	0	6
Chocolate. 1 bar	3	23	13
Eggs, 2 whole	12	0	9
2% milk, 1 cup	8	12	5
Potato chips, 15 chips	2	14	10
Skinless roasted turkey, 3 slices	11	3	1

1. Per serving, which of the foods included in the table has the most protein? Which as the most carbohydrates? Which has the most fat?

2. Approximately how many more Calories are the in 2 slices of bacon that there are in 3 slices of roasted turkey? Why is there a difference?

3. Walking at a moderate pace consumes around 300 Calories per hour. At that rate, how many minutes would you have to walk to burn the Calories in one chocolate bar? (HINT: Start by calculating the number of Calories consumed per minute by walking)

Overview of Cellular respiration

4) What is cellular respiration? _____

5) Write down the equation for Cellular Respiration:

In Symbols: _____

In Words: _____

6) If cellular respiration took place in one step, where would all of the energy from glucose go? _____

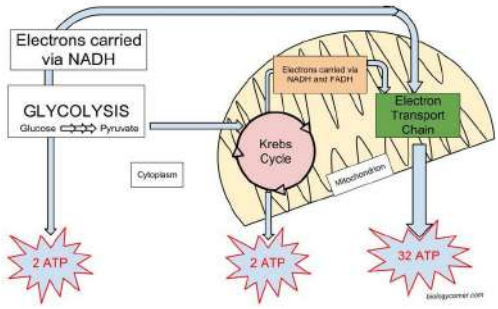
_____

7) What are the 3 main stages in Cellular Respiration?

i. _____

ii. _____

iii. _____



8) At the end of glycolysis, only a small portion of the energy from glucose is captured. What is the name of of the molecule that contains 90% of glucose's energy? _____

9) In terms of Cellular Respiration, why is it important of humans to breathe? _____

_____

10) Define the following terms:

AEROBIC: _____

ANAEROBIC: _____

11) If whales remain underwater for 45 minutes or more, do you think they rely primarily on aerobic or anaerobic pathways? _____

12) a. Where does glycolysis occur in the cell? _____

b. Where do the Krebs Cycle and the electron transport chain occur in the cell? _____

13) In what ways are cellular respiration and photosynthesis considered opposite processes?