Lesson 52: Cellular Respiration Notes

The Flow of Energy

1. List some cellular tasks that require energy:

2. What is the source of all energy on Earth? _____

3. Which product of photosynthesis stores energy? _____

4. What form of chemical energy is useable by the cell? _____

5. Is energy recycled? _____

6. Write out the equation for Photosynthesis and Cell Respiration below:

Photosynthesis	
Cell Respiration	

7. Which of the above equations is catabolic? Which is anabolic? (Mark them with an A or C, respectively.)

8. Distinguish between autotrophs and heterotrophs. Which have chloroplasts? Which have mitochondria?

9. Draw the basic structure of ATP. Indicate on the drawing where you would break the bond to release energy. What molecule results when you break this bond? _____

10. List at least two other energy carrying molecules, other than ATP:

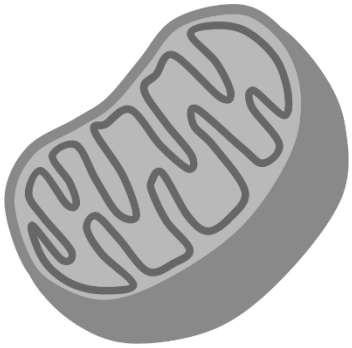
Aerobic Cellular Respiration

11. What is the purpose of cellular respiration?

12. How is cellular respiration different than burning fuel in a car? How is it the same?

13. Why is cellular respiration considered aerobic?

14. Label the mitochondrion with the following parts: **outer membrane, inner membrane (cristae), intermembrane space, matrix.**

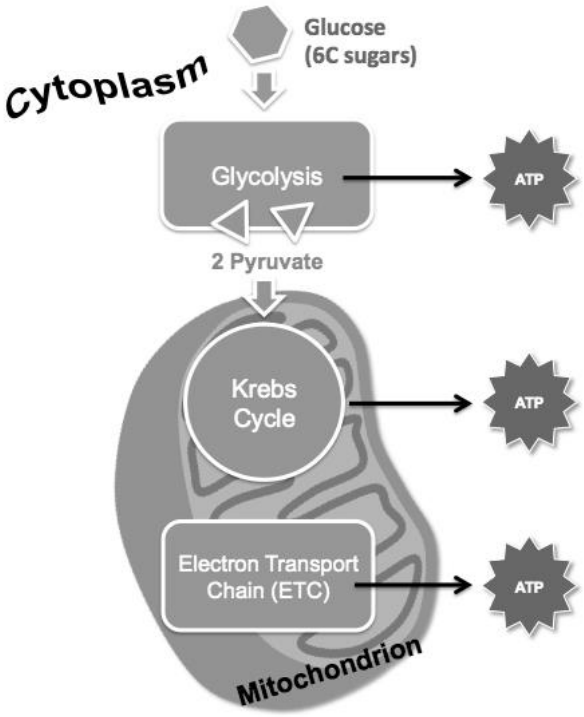


15. What does the word glycolysis mean?

16. Complete the Table below while reading about each stage of Cell Respiration:

Stage	Where it Occurs	What Goes In	What Comes Out
Glycolysis			
Krebs cycle			
Electron Transport Chain (ETC)			

17. Can you add the missing pieces to this diagram after reading through the notes on the 3 stages of Cell Respiration?
    - Where is oxygen used?
    - Where is carbon dioxide released?



18. How many ATP are made during aerobic cellular respiration? _____

19. What role does ATP Synthase Play?

20. What is the purpose of oxygen in Cell Respiration?

21. Cellular respiration begins with a pathway called _____.

22. Is the following sentence True or False? Glycolysis releases a great amount of energy. _____

Name That Stage! Practice

23. Use this space to record the correct answers for this activity:

Glycolysis	Krebs Cycle	ETC

The Powerhouse of the Cell Movie

24. Distinguish between fast and slow twitch fibers. When are they used? Which have more mitochondria?

25. What does exercise training do for our muscle cells?

26. What damages mitochondrial DNA?

27. As a person ages, **what changes occur** that contributes to aging and lack of stamina?

Anerobic Respiration: Fermentation

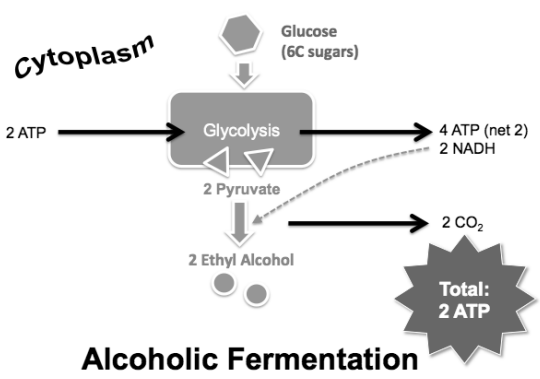
28. Because fermentation does not require oxygen, it is said to be

    _____.

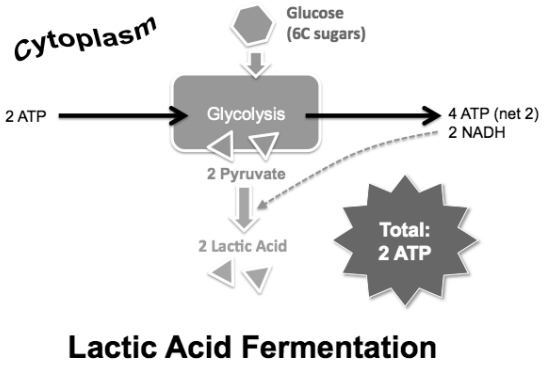
29. List the two main types of fermentation, distinguish between each using the table on the next page:

Fermentation Type	Where it Occurs	What Goes In	What Comes Out

How is each type of fermentation used commercially?



Alcoholic Fermentation



Lactic Acid Fermentation

30. During rapid exercise, how do your muscle cells produce ATP?

31. When a runner needs quick energy for a short race, what source can supply enough ATP for about 90 seconds?

32. Why does a sprinter have an oxygen debt to repay after the race is over?

Fermentation Separation Practice Activity

33. Make some notes about your learning from this activity:

Alcoholic Fermentation	Both	Lactic Acid Fermentation