

## Cellular Respiration Worksheet

1. \_\_\_\_ When living cells break down molecules, energy is
  - a. stored as ADP.
  - b. stored as ATP.
  - c. released as heat.
  - d. Both b and c
2. \_\_\_\_ In cellular respiration, the most energy is transferred during
  - a. glycolysis.
  - b. lactic acid fermentation.
  - c. the Krebs cycle.
  - d. the electron transport chain
3. \_\_\_\_ Electrons are donated to the electron transport chain by
  - a. ATP and NADH.
  - b. FADH<sub>2</sub> and NADH.
  - c. ATP and NAD<sup>+</sup>.
  - d. NAD<sup>+</sup> and ATP.
4. \_\_\_\_ The breakdown of organic compounds to produce ATP is known as
  - a. cellular respiration
  - b. alcoholic fermentation
  - c. lactic-acid fermentation
  - d. photosynthesis
5. \_\_\_\_ Glycolysis begins with glucose and produces
  - a. PGAL
  - b. lactic acid
  - c. acetyl CoA
  - d. pyruvic acid
6. \_\_\_\_ The electron transport chain is driven by two products of the Krebs cycle-
  - a. oxaloacetic acid and citric acid
  - b. H<sub>2</sub>O and CO<sub>2</sub>
  - c. NADH and FADH<sub>2</sub>
  - d. acetyl CoA and ATP
7. \_\_\_\_ What happens to electrons as they are transported along the electron transport chain?
  - a. They lose energy.
  - b. They gain energy.
  - c. They are pumped into space between the inner and outer mitochondrial membranes.
  - d. They combine with O<sub>2</sub> and protons to form water.
  - e. None of the above.
8. \_\_\_\_ Cellular respiration takes place in two stages:
  - a. glycolysis and fermentation.
  - b. Stage 1 and Stage 2 of photosynthesis.
  - c. glycolysis, then respiration.
  - d. respiration, then glycolysis.
9. \_\_\_\_ In cellular respiration, a two-carbon molecule combines with a four-carbon molecule to form citric acid as part of
  - a. glycolysis.
  - b. carbon fixation.
  - c. the Krebs cycle.
  - d. the electron transport chain.
10. \_\_\_\_ Acetyl coenzyme A
  - a. is formed from the breakdown of pyruvic acid.
  - b. enters the Krebs cycle.
  - c. can be used in synthesis of needed molecules.
  - d. All of the above
11. \_\_\_\_ Which of the following is not formed during the Krebs cycle?
  - a. CO<sub>2</sub>
  - b. NADH
  - c. FADH<sub>2</sub>
  - d. NADPH

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12. \_\_\_\_ Which of the following is not part of cellular respiration?  
a. electron transport      b. the Krebs cycle      c. glycolysis      d. the Calvin cycle
13. \_\_\_\_ With oxygen present, the Krebs cycle and the electron transport chain  
a. provide organisms an alternative to glycolysis.  
b. produce most of the ATP needed for life.  
c. break down glucose to produce carbon dioxide, water, and ATP.  
d. All of the above
14. \_\_\_\_ Water is an end product in  
a. lactic acid formation.      c. the Krebs cycle.  
b. fermentation.      d. the electron transport chain.
15. \_\_\_\_ Krebs cycle : CO<sub>2</sub> ::  
a. glycolysis : glucose  
b. acetyl CoA formation : O<sub>2</sub>  
c. cellular respiration : O<sub>2</sub>  
d. electron transport chain : ATP
16. \_\_\_\_ At the end of the electron transport chain,  
a. the electrons combine with oxygen and protons to form water.  
b. the electrons are used in the formation of ethyl alcohol.  
c. the electrons build up inside the mitochondria and diffuse back to a thylakoid.  
d. None of the above
17. \_\_\_\_ In the first step of aerobic respiration, pyruvic acid from glycolysis produces CO<sub>2</sub>, NADH, H<sup>+</sup>, and  
a. citric acid      b. acetyl CoA      c. oxaloacetic acid      d. lactic acid
18. \_\_\_\_ Energy is released from ATP when the bond is broken between  
a. two phosphate groups      c. ribose and a phosphate group  
b. adenine and ribose      d. adenine and a phosphate group
19. \_\_\_\_ The final electron acceptor for the electron transport chain of aerobic respiration is which of the following?  
a. hydrogen      b. water      c. ATP      d. oxygen
20. \_\_\_\_ An important molecule generated by both lactic acid and alcoholic fermentation is  
a. ATP      b. NADH      c. CO<sub>2</sub>      d. NAD<sup>+</sup>
21. \_\_\_\_ In glycolysis,  
a. aerobic processes occur  
b. four ATP molecules are produced  
c. four ADP molecules are produced  
d. glucose is produced
22. \_\_\_\_ After proton pumps in mitochondria have depleted electrons of their energy during ATP production,  
a. the electrons carried as part of hydrogen atoms are used in the formation of water  
b. the electrons carried as part of hydrogen atoms are used in the formation of ethyl alcohol  
c. electrons build up inside the mitochondria and diffuse back to a thylakoid  
d. None of the above.

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23. \_\_\_ Glycolysis takes place
- in the cytosol
  - in the mitochondria
  - only if oxygen is present
  - only if oxygen is absent
24. \_\_\_ Yeast produce alcohol and CO<sub>2</sub> in the process of
- lactic acid fermentation
  - aerobic respiration
  - alcoholic fermentation
  - glycolysis
25. \_\_\_ The electron transport chain of aerobic respiration
- generates O<sub>2</sub> from H<sub>2</sub>O
  - produces NADH by chemiosmosis
  - pumps electrons into the mitochondrial matrix
  - pumps protons into the space between the inner and outer mitochondrial membranes
26. \_\_\_ In cellular respiration, the most energy is transferred in which step?
- glycolysis
  - electron transport chain
  - Krebs cycle
  - fermentation
27. \_\_\_ The conversion of pyruvic acid to carbon dioxide and ethanol is called
- lactic acid fermentation
  - alcoholic fermentation
  - gasohol conversion
  - glycolysis
28. \_\_\_ In aerobic respiration, glucose molecules are converted into acetyl CoA molecules when they enter
- the electron transport chain
  - the Krebs cycle
  - glycolysis
  - the Calvin cycle
29. \_\_\_ Both lactic acid and alcoholic fermentation produce
- a two-carbon molecule from a six-carbon molecule
  - CO<sub>2</sub> from a three-carbon molecule
  - ATP from ADP and phosphate
  - NAD<sup>+</sup> from NADH and H<sup>+</sup>
30. \_\_\_ The Krebs cycle
- breaks down a two-carbon molecule into two molecules of CO<sub>2</sub>
  - produces a six-carbon molecule from six molecules of CO<sub>2</sub>
  - produces NAD<sup>+</sup> from NADH and H<sup>+</sup>
  - generates most of the ATP produced in aerobic respiration
31. \_\_\_ Which of the following is a unit of energy?
- kilocalorie
  - cytosol
  - glycolysis
  - NAD<sup>+</sup>
- \_\_\_ The breakdown product of glucose that diffuses into the mitochondrial matrix for further breakdown is
- acetyl CoA
  - pyruvic acid
  - oxaloacetic acid
  - citric acid
32. \_\_\_ Glycolysis and oxidative respiration are different in that
- glycolysis occurs on the cell membrane, while oxidative respiration occurs in mitochondria
  - glycolysis occurs only in photosynthesis, while oxidative respiration is part of cellular respiration
  - glycolysis occurs in the absence of oxygen, while oxidative respiration requires oxygen
  - both of these terms are different names for the same process
33. \_\_\_ In the presence of oxygen \_\_\_ molecules of ATP can be formed.
- 2
  - 19
  - 38
  - 63
34. \_\_\_ Aerobic processes require \_\_\_ in order to take place.
- sunlight
  - water
  - oxygen
  - carbon dioxide

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35.\_\_\_\_ To maximize ATP production, glycolysis must be followed by  
a. fermentation      b. the Krebs cycle      c. The Calvin cycle      d. photosynthesis

36.\_\_\_\_ When muscles are exercised extensively in the absence of sufficient oxygen,  
a. lactic acid is produced      c. a large amount of ATP is formed  
b. NADH molecules split      d. oxidative respiration occurs



37.\_\_\_\_ The process shown in the equation above begins in the cytoplasm of a cell and ends in the  
a. cytoplasm.      b. endoplasmic reticulum.      c. mitochondria.      d. lysosome.

38.\_\_\_\_ The equation above summarizes the process known as  
a. photosynthesis.      b. cellular respiration.      c. fermentation.      d. protein breakdown.

39.\_\_\_\_ The molecule referred to as “molecule A” in the equation above is  
a. NADPH.      b. NADH.      c. ATP.      d. ADP.