Cellular Respiration Notesheets by C. Kohn, Waterford WI

Name: Hour Date:

Date Assignment is due: Why late? Score: + ✓ -
 Day of Week Date If your project was late, describe why

**Directions**: Complete using the accompanying PowerPoint (<http://bit.ly/cell-resp-notes>). This is graded on a + ✓- scale.

1. Describe cellular respiration in your own words:

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2. What are three key points about respiration?

1\_

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3\_
3. What is the simplest carbohydrate? What is a carbohydrate

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4. Is glucose used to power cellular activity? Explain:

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5. Glucose is the way in which living organisms get into

\_ Those hydrogen atoms are used to

 . ATP Synthase produces
6. If glucose DOES NOT power cellular activity, what does?
7. All carbohydrates are made of . The longer the chain of

glucose, the more
8. Why do simple sugars break down more easily in our bodies than fiber and whole grains?

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9. What must happen to all carbohydrates before they can be absorbed into the bloodstream?

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10. Why is it necessary to break down all carbohydrates into individual glucose molecules?

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11. What happens to glucose after it moves from the blood into the cytosol of the cell?

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12. What is a pyruvate?
13. Where is the pyruvate completely broken down?
14. Draw and label the following 🡪
Mitochondria
Outer membrane
Intermembrane Space
Inner Membrane
Matrix
Hydrogen
ATP Synthase
15. Where is the intermembrane space located?

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16. What is stored in the intermembrane space? Why is this store here?

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17. What would we find on the inner membrane of the mitochondria?
18. Label the following in the picture:
Outer membrane, inner membrane,
intermembrane space, ATP Synthase,
hydrogen protons, ATP, ADP, Pi. Also
draw an arrow showing in what way
hydrogen flows in this picture.
19. The main point of cellular respiration is to obtain in order to power

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20. A series of are necessary to break down

 in order to the atoms.
21. List AND describe the four steps of cellular respiration in 10 words or less:

Step 1: Description:

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Step 2: Description:

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Step 3: Description:

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Step 4: Description:

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1. In glycolysis, glucose ( ) becomes ( ) and

\_ .
2. It takes to break apart a molecule. What energy is used for this?

\_\_\_\_\_\_\_\_\_\_. ATP is recreated in Glycolsis using
3. What is Substrate Level Phosphorylation?

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4. How is ATP production in Glycolysis in the cytosol different from ATP production in the mitochondria?

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5. Draw Substrate Level Phosphorylation here 🡪
6. What happens in the TCA Cycle?
7. What 2 molecules move H+ from pyruvate to the intermembrane space? &
8. NAD+ and FAD+ are sort of like for hydrogen.
9. How many CO2 are produced during the TCA cycle? Where does this CO2 come from?

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10. What is the main purpose of the Electron Transport System?

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11. The inner membrane of the mitochondria has that get

\_ from and and cram it into the

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12. What powers the proteins that pump H+ into the intermembrane space?
13. What happens in Oxidative Phosphorylation?
14. What is the only way out of the intermembrane space for a H+ proton?
15. As hydrogen atoms move past they it, powering the

production of from .
16. What does “phosphorylation” mean?
17. Where do the hydrogen protons go after powering ATP Synthase?

	1. What happens here?
18. How is oxidative phosphorylation in the mitochondria different from substrate-level phosphorylation in the cytosol?

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19. In agriculture, plants and animals that produce more will produce
20. What would happen if there was not oxygen to remove hydrogen from the matrix of the mitochondria?

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21. If a cell stopped producing ATP in the mitochondria, what would happen?

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22. What is fermentation?

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23. If you could choose, which pathway would be better for acquiring the maximum amount of ATP, oxidative phosphorylation or substrate level phosphorylation? Why?

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24. What are 5 ways to maximize ATP Production?

1\_

2\_

3\_

4\_

5\_
25. Write a summary of cellular respiration in the spaces below:

1\_

2\_

3\_

4\_

5\_

6\_

7\_

1. Rank yourself on each of the objectives below. A “+” means that you could easily answer that item with no help from your notes. A “✓ “ means that you could answer it but you would need your notes. A “-“ means that even with your notes, you would struggle to answer that item.

	1. + ✓ - I can list the parts of the mitochondria and where each step of respiration occurs in the cytosol/mitochondria.
	2. + ✓ - I can state the differences and the similarities between substrate-level phosphorylation and oxidative phosphorylation.
	3. + ✓ - I can identify the roles of each of the following in cellular respiration:
		1. Glucose
		2. Pyruvate
		3. NAD+/FAD+
		4. The TCA cycle
		5. The Electron Transport System
		6. Hydrogen
		7. ATP Synthase
		8. Oxygen.
	4. + ✓ - I can list 5 ways to increase ATP production at the cellular level.
	5. + ✓ - I can name and summarize what occurs at each of the 4 steps of respiration.

Unit Wrap-up C. Kohn, Agricultural Sciences - Waterford WI

This page is designed to help raise your grade while enabling you to develop skills you will need for after high
school. You will need to complete every question and blank in order to receive full credit for your notes. Note: if you cannot come up with a strategy to remember a difficult concept on your own, see your instructor for help.

1. What is a topic or concept from this unit that you found to be more challenging? Write or describe below:

In the space below, create a mnemonic, rhyme, analogy, or other strategy to help you remember this particular concept:
2. What is a 2nd topic or concept from this unit that you found to be more challenging? Write or describe below:

In the space below, create a mnemonic, rhyme, analogy, or other strategy to help you remember this particular concept:
3. What is a 3rd topic or concept from this unit that you found to be more challenging? Write or describe below:

In the space below, create a mnemonic, rhyme, analogy, or other strategy to help you remember this particular concept:
4. Circle the most appropriate response. You will only be graded on whether or not you completed this section, so be entirely honest with yourself when completing this section.

Circle one: *I used my notes outside of class to prepare for the quiz.* Definitely – Yes – Sort of - No

Circle one: *I took extra notes in the margins for very difficult concepts.* Definitely – Yes – Sort of - No

Circle one: *I created a personal strategy for at least three difficult items.* Definitely – Yes – Sort of - No

Circle one: *I was very involved and actively studying during the quiz review.* Definitely – Yes – Sort of - No

Circle one: *I think I will be satisfied with the quiz grade I received this week.* Definitely – Yes – Sort of - No

Circle one: *I might need to meet with the instructor outside of class.* Definitely – Yes – Sort of - No