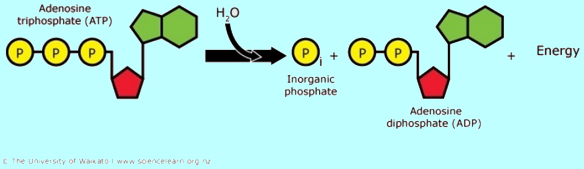
THE PURPOSE OF CELLULAR

cellular respiration

the process by which cells in plants and animals break down sugar and turn it into energy

Mar 2-10:06 AM



With the addition of water, ATP produces ADP, a free phosphate group, and energy that the cell can use

Mar 2-1:10 PM

CELLULAR RESPIRATION:

The release of energy during cellular respiration

energy released

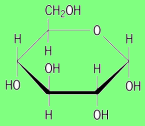
glucose + oxygen → carbon dioxide + water

$C_6H_{12}O_6 + 6O_2 \longrightarrow 6CO_2 + 6H_2O$

Sep 29-1:53 PM

Cellular Respiration:

$C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O + 36\ ATP$ [energy!]



Anaerobic Respiration:

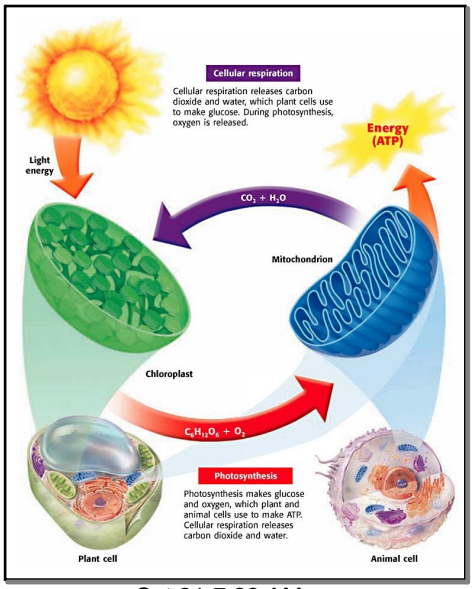
$C_6H_{12}O_6 \longrightarrow 2C_3H_6O_3 + 2\ ATP$

glucose — lactic acid

1. What is the key difference between aerobic respiration and anaerobic respiration?
2. Write the *word equation* for aerobic cellular respiration?

glucose + oxygen → carbon dioxide + water + energy

Feb 25-8:46 AM



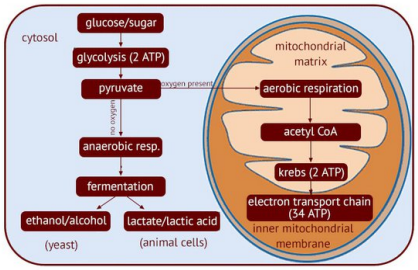
Oct 21-7:22 AM

Aerobic Respiration	Anaerobic Respiration
with oxygen	without oxygen
releases more energy 36 ATP	release less energy 2 ATP
produces carbon dioxide and water	produces lactic acid
Glucose completely broken down	Glucose NOT completely broken down
occurs in mitochondria	occurs in cytoplasm

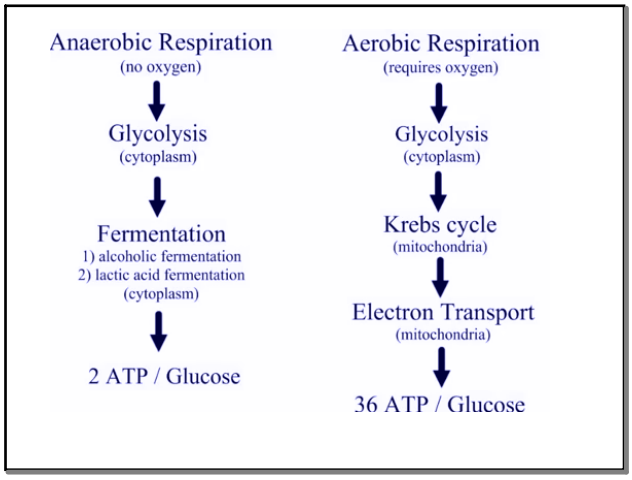
Mar 2-10:10 AM

Lactic Acid

- Lactic acid (lactate) is poisonous and builds up in the muscles during anaerobic exercise
- Lactic acid is sent to the liver where it must be broken down
- This breakdown requires oxygen and is called the **oxygen debt**
- This happens when oxygen becomes available again



Sep 29-2:06 PM



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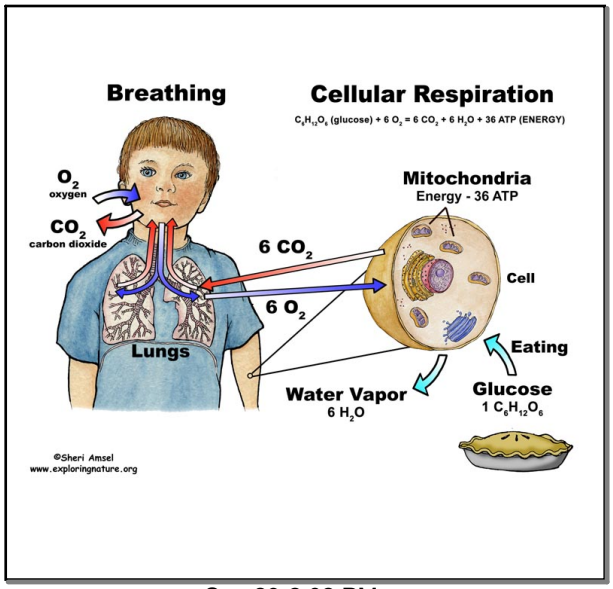


Sep 29-2:02 PM

3. How many ATP molecules are produced during aerobic respiration?
36
4. How many ATP molecules are produced during anaerobic respiration?
2
5. What is the cause of pain and stiffness felt after strenuous exercise?
lactic acid
6. What do athletes do to help prevent oxygen debt during a competition?
higher altitude, train, breathing techniques
7. Use your text (page 73) to explain the cause of *rigor mortis*.
cell death, ↓ in body temp, stiffness lactic acid

Feb 25-8:50 AM

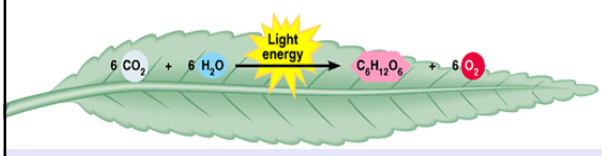
PHOTOSYNTHESIS:

Light

Carbon Dioxide + Water → Glucose + Oxygen

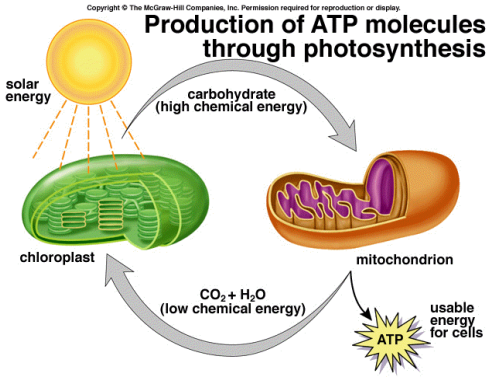
Chlorophyll

$6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$



Sep 29-1:55 PM

What Do You Notice About the 2 Equations?



Sep 29-2:03 PM

Read pg 81 of the textbook and fill in the chart below:

	Photosynthesis	Cellular Respiration
Function	make glucose	make energy (ATP)
Location	chloroplast	mitochondria
Energy Source	sun	chemical energy (chemical bonds)
Oxygen	produced	required
Purpose of Energy	Sun's energy gets stored in chemical bonds	energy is used for life processes
Reactants	carbon dioxide water	glucose oxygen
Products	glucose oxygen	carbon dioxide water
Equation