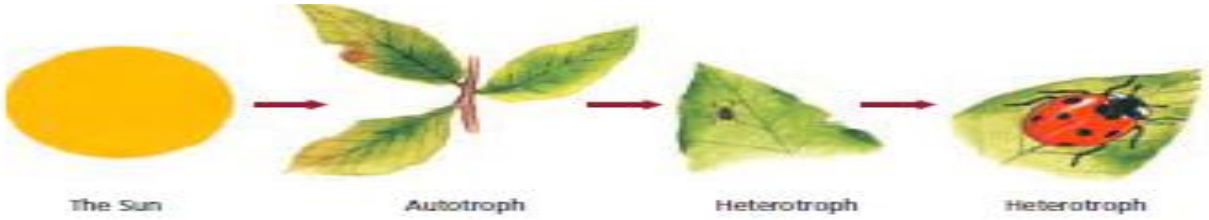
Name:_____ Cellular Transport

AIM : Identify the reactants, products, and basic purposes of photosynthesis and cellular respiration.
*Explain the interrelated nature of photosynthesis and cellular respiration
*Explain the important role that ATP serves in metabolism.

- ACTIVATOR: How do living things obtain energy? Plants, Lions, Zebras, bacteria?



- All Organisms need energy to live
- _____
  _____
- _____
  _____Heterotrophs are called _____ and they
  _____

METABOLISM

- _____
  _____

In plants _____
_____
_____
_____

In heterotrophs(humans)_____
_____
_____
_____

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PHOTOSYNTHESIS

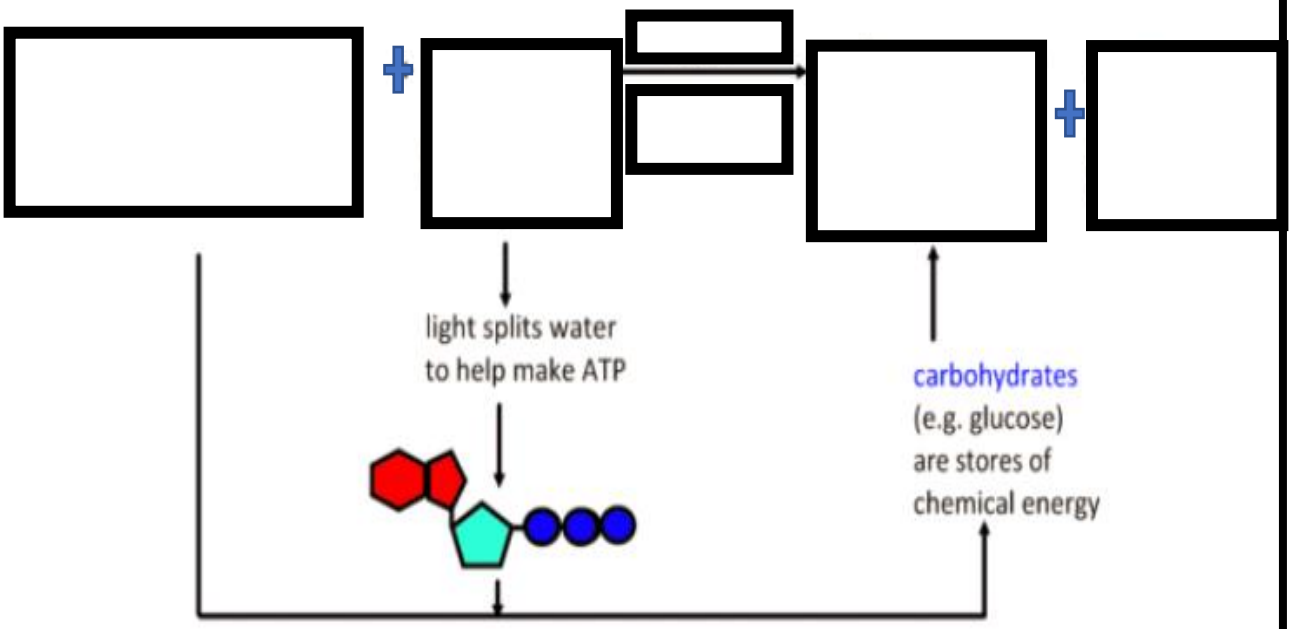
- Energy is transformed all around us every day. Batteries convert chemical energy into electrical energy into electrical energy, and radios convert electrical energy into energy carried by sound waves. Autotrophs convert light energy into chemical energy through photosynthesis.

_____

_____

_____

- **The formula for photosynthesis is :**



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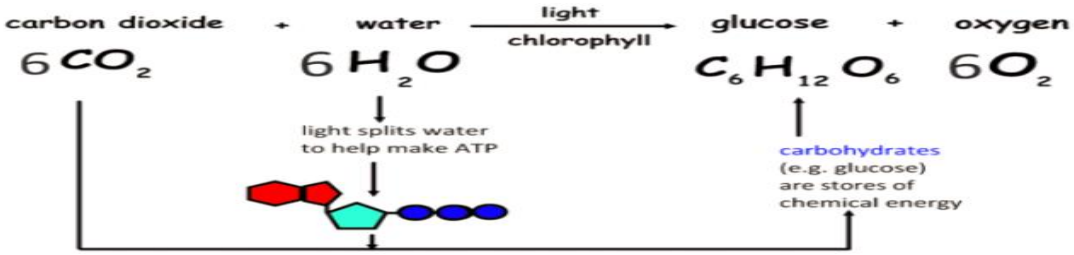
Diffusion across a plasma(cell) membrane



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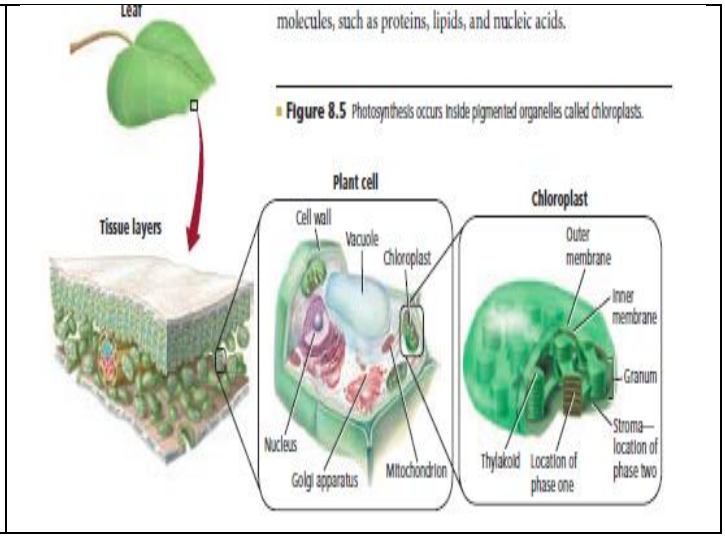

molecules, such as proteins, lipids, and nucleic acids.

Figure 8.5 Photosynthesis occurs inside pigmented organelles called chloroplasts.

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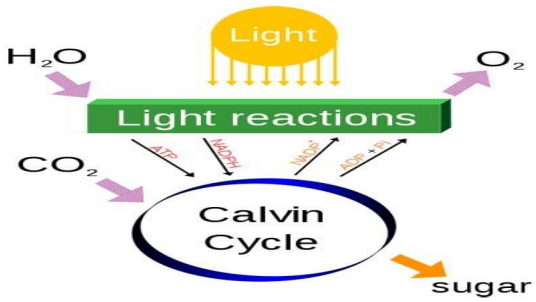
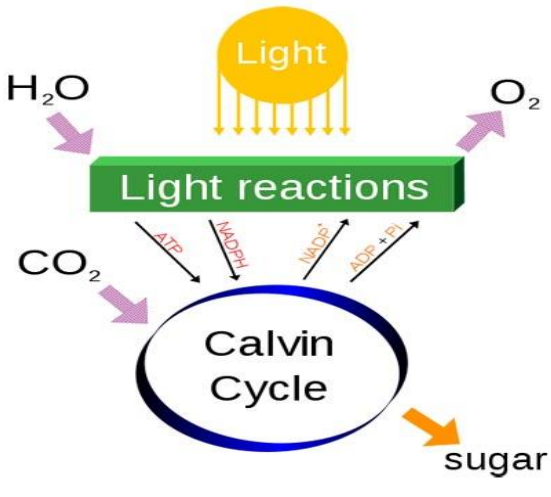
CAN WE EXPLAIN WHAT IS GOING ON IN THIS PICTURE???????????



YOUR RESPONSE

-



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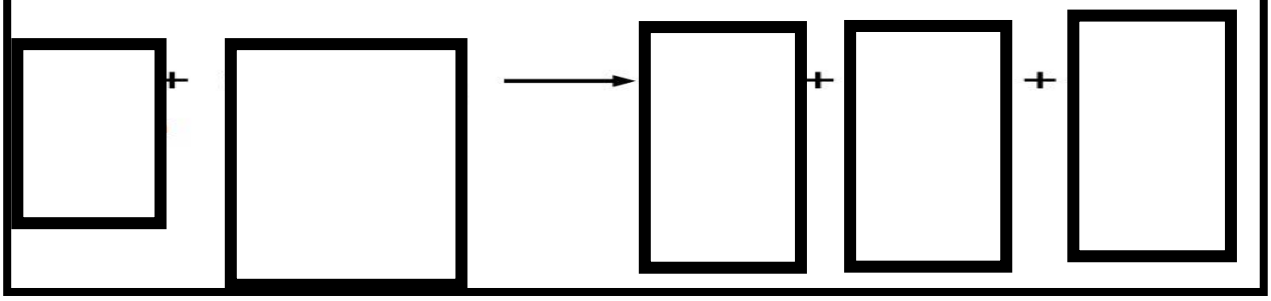
Activator: Plants use Photosynthesis, WELL WHAT ABOUT THINGS THAT ARE NOT PLANTS????
How do they get energy?

CELLULAR RESPIRATION

- _____
  _____

The equation for cellular respiration is...



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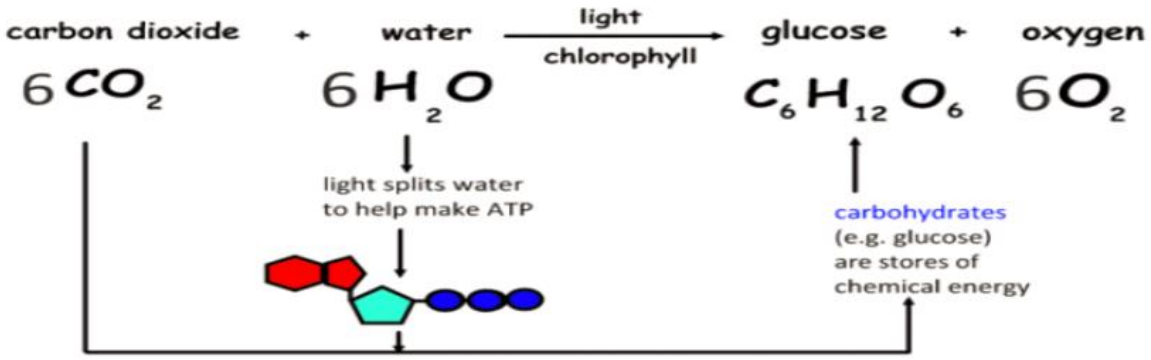
O_2 + $C_6H_{12}O_6$ ⟶ CO_2 + H_2O + ATP

Oxygen Glucose Carbon dioxide Water Energy

VS



DO WE NOTICE ANY PATTERN OR SIMILARITY?????????????

O_2 + $C_6H_{12}O_6$ ⟶ CO_2 + H_2O + ATP

Oxygen Glucose Carbon dioxide Water Energy

- Cellular Respiration is the opposite of Photosynthesis!
  - **Oxygen and Glucose begin the reaction and carbon dioxide, water and energy are produced at the end.**
- _____
- _____
  _____
- _____
  _____

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WHICH IN ANAEROIBIC? WHICH IS AEROIBIC?

6 Which of the following substances is used by plants as a reactant in photosynthesis?

A. carbon dioxide
B. glucose
C. oxygen
D. pyruvic acid

31 Some types of bacteria are able to perform photosynthesis. These bacteria must therefore contain which of the following in their membranes?

A. chlorophyll
B. glucose
C. mitochondria
D. ribosomes

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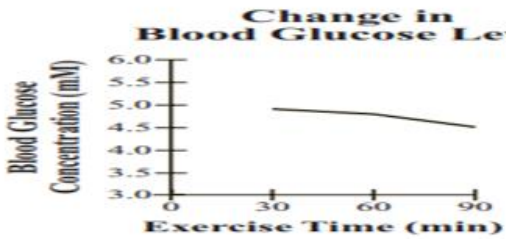
34 The graph below shows the change in blood glucose level during prolonged exercise.



Which of the following statements explains the change in blood glucose level shown in the graph?

A. Glucose was broken down to produce ATP for energy.
B. Glucose diffused from muscle cells into the bloodstream.
C. Proteins combined with glucose to produce ADP for energy.
D. Polysaccharides were made from glucose in metabolic pathways.

6 In the first step of glycolysis, glucose is converted to glucose-6-phosphate. Which of the following supplies the energy for the reaction?

A. ATP .
B. RNA
C. oxygen
D. hydrogen

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26 Which of the following statements describes a difference between photosynthesis and cellular respiration in plants?

A. Photosynthesis occurs only during the day, whereas cellular respiration occurs only at night.

B. Photosynthesis involves only one reaction, whereas cellular respiration involves many steps.

C. Photosynthesis occurs only in cells containing chlorophyll, but cellular respiration occurs in all cells.

D. Photosynthesis converts light energy into chemical energy, but cellular respiration converts light energy into heat energy.

25 In cells, aerobic respiration (cellular respiration in the presence of oxygen) is more efficient than anaerobic respiration (cellular respiration in the absence of oxygen). This is because aerobic respiration produces more of which of the following substances?

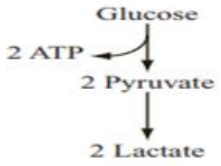
A. ATP

B. DNA

C. glucose

D. protein

42 If a person is constantly feeling weak and has low energy levels, a doctor may test the blood for lactate. High lactate levels may indicate that the person's body is breaking down glucose by fermentation instead of by aerobic respiration. The diagram below represents the process of fermentation.



Based on the diagram, which of the following statements best explains why an increase in fermentation and a decrease in aerobic respiration might cause a person to feel weak and have low energy levels?

A. Less ATP is being produced.

B. Less pyruvate is being produced.

C. The amount of lactate available as a product is limited.

D. The amount of glucose available as a reactant is limited.

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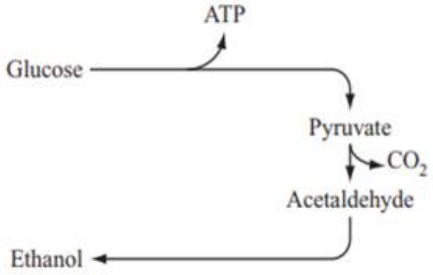
18 The diagram below summarizes a series of chemical reactions that occur in cells.



Which product of these reactions directly supplies energy to cells?

A. ATP
B. pyruvate
C. CO_2
D. ethanol

9 Which process do elk and other Yellowstone animals use to convert energy in their food into ATP?

A. cellular respiration
B. filtration
C. osmosis
D. photosynthesis

22 Which of the following happens when a phosphate-phosphate bond in an ATP molecule is broken?

A. Energy is released in a cell.
B. Light energy is absorbed in a plant cell.
C. Water is transported into an animal cell.
D. Lysosome contents are released in a cell.

21 During exercise, a person's muscles need a constant supply of ATP. To meet this need, the rate of which of the following processes increases?

A. cellular respiration
B. mitosis
C. protein synthesis
D. transcription