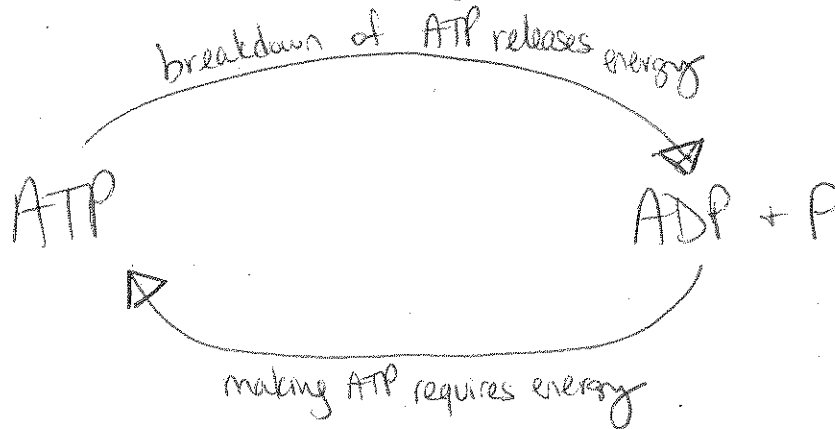


ATP Cycle



Types of Reactions

Exergonic reaction:

energy is released

Endergonic reaction:

energy is absorbed

Enzymes

An enzyme is a catalyst in living organisms that increases the rate of a reaction by decreasing the activation energy to start the reaction.

Enzymes can be denatured by changing the temperature, adding salt or sugar, and changing whether the solution is an acid or a base.

When an enzyme is denatured it no longer functions.

Autotroph

Auto- self

-troph feeder

Examples

plants, algae

Heterotroph

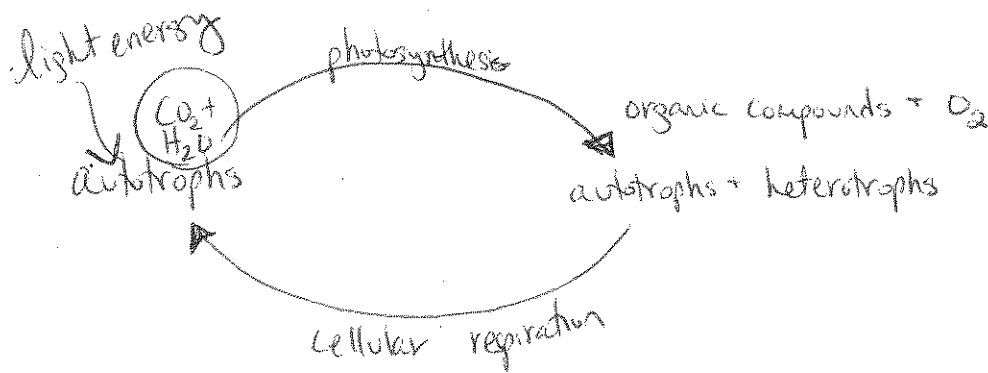
Hetero- different

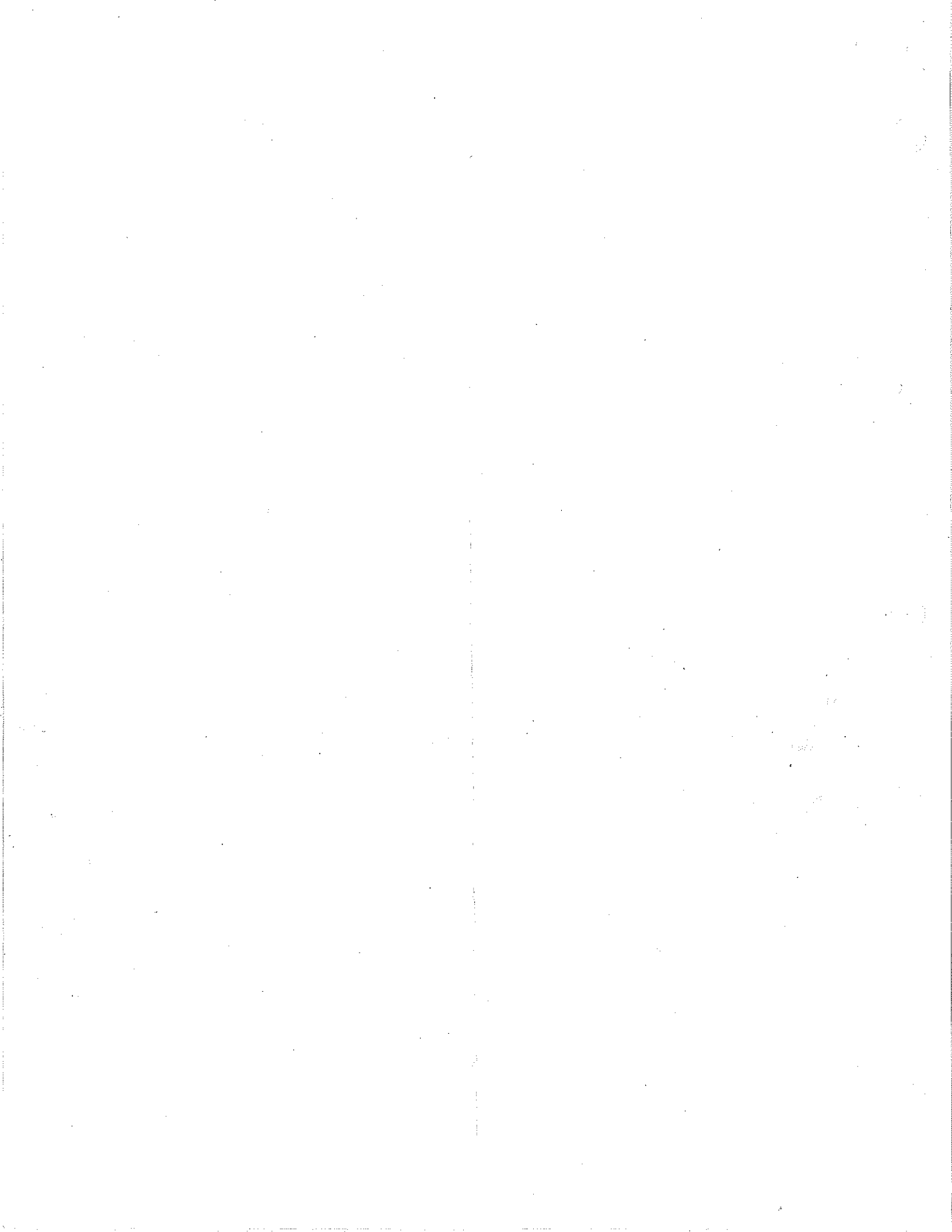
-troph feeder

Examples

animals, fungi

Photosynthesis and Cellular respiration Cycle





## Photosynthesis Notes

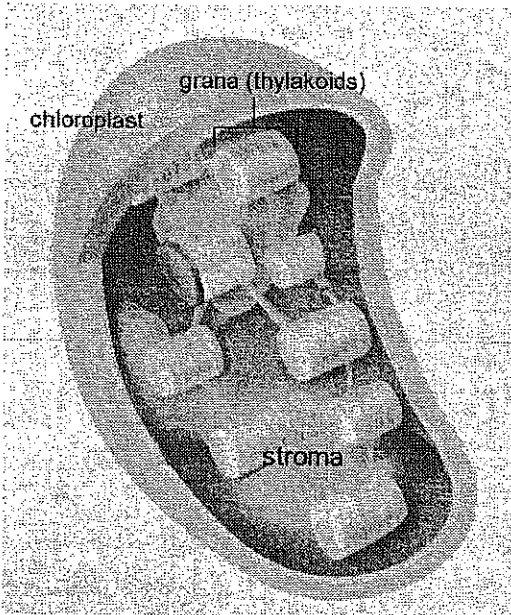
### What does photosynthesis mean?

- Photo- light
- -synthesis to make compounds

The process occurs in autotrophs or producers.

Examples include:  
plants/algae

The organelle responsible for the process is chloroplast



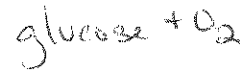
### Equation



Reactants:



Products:



### Reaction can be increased by manipulating the following factors

- 1) Light: add more light, rate ↑  
- red + blue light is best
- 2) Carbon dioxide: add more  $\text{CO}_2$   
+ rate ↑
- 3) Temperature: optimal range for temp.  
- outside of the range + process stops

### Light reactions or Light-dependent reactions

Occurs in the thylakoid of the chloroplasts

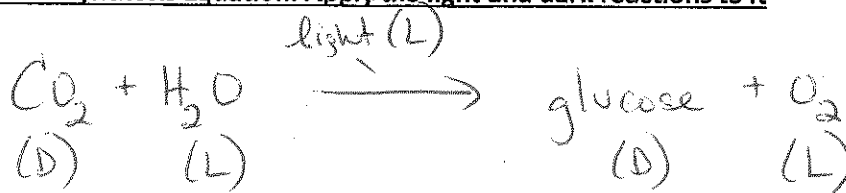
Uses light and  $\text{H}_2\text{O}$  to make energy for the dark reactions and it releases  $\text{O}_2$  to the atmosphere

### Dark reactions or Light-independent reactions

Occurs in the stroma of the chloroplasts

Uses  $\text{CO}_2$  and energy from the light reactions to make sugar

### Photosynthesis Equation: Apply the light and dark reactions to it



What happens during cellular respiration?

breakdown of organic compounds to release energy

**Two types of cellular respiration:**

**Anaerobic respiration:**

Occurs in the absence of oxygen

Occurs in the cytoplasm of cells

It produces 2 ATP (energy) molecules

Two types:

1) Lactic acid fermentation:

- Occurs in muscle cells of humans during exercise
- Used in the production of dairy products

2) Alcohol fermentation:

- Used to produce ethanol
- Used in making bread

**Aerobic respiration:**

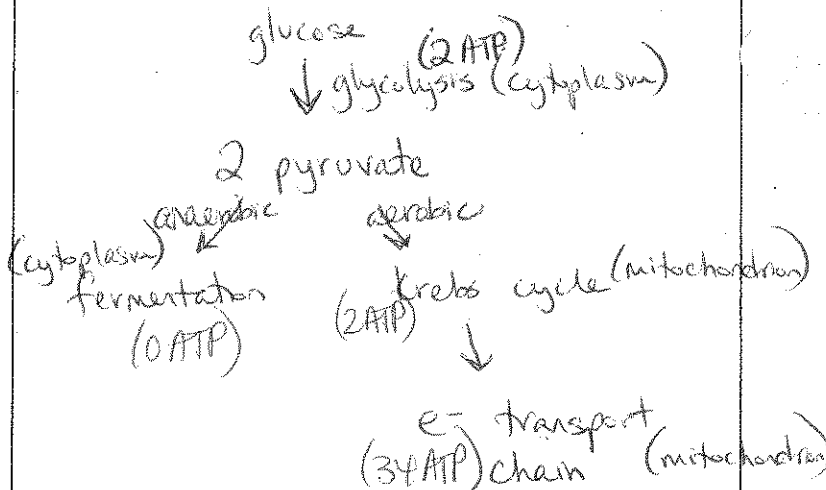
Occurs in the presence of oxygen

Occurs in the mitochondrion of cells

It produces 36 ATP (energy) molecules

38

**Flow chart for the breakdown of one Glucose molecule:**



Mitochondria Inner Structure

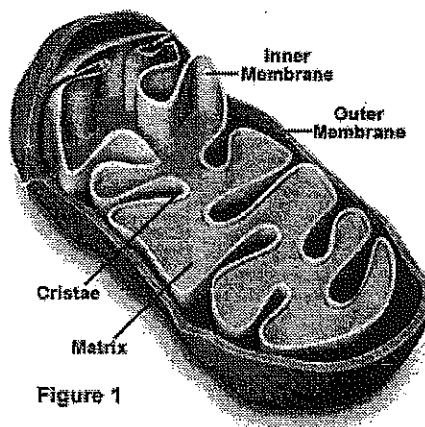


Figure 1

**Krebs Cycle**

Occurs in matrix of the mitochondrion

Uses the pyruvic acid molecules to completely breakdown sugar into Carbon dioxide and energy molecules

This cycle requires 2 turns

**Electron transport chain**

Occurs in inner membrane of the mitochondrion

Uses energy molecules from glycolysis and Krebs cycle to create H<sub>2</sub>O and ATP (energy)

**Aerobic respiration Equation**



Reactants



Products



Name

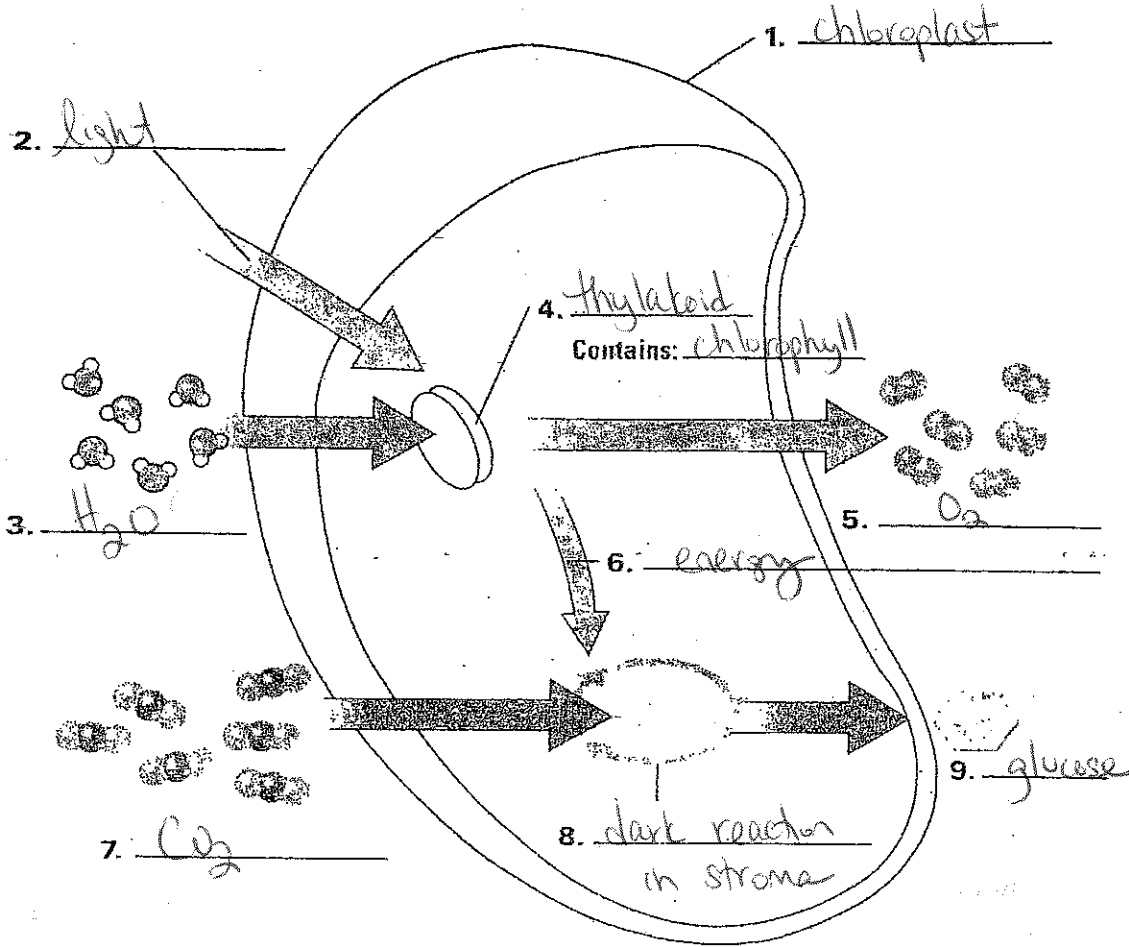
Period

Date

SECTION  
4.2

OVERVIEW OF PHOTOSYNTHESIS  
**Power Notes**

Photosynthesis:



Write the equation for photosynthesis:

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CHAPTER 4  
Cells and Energy

Name

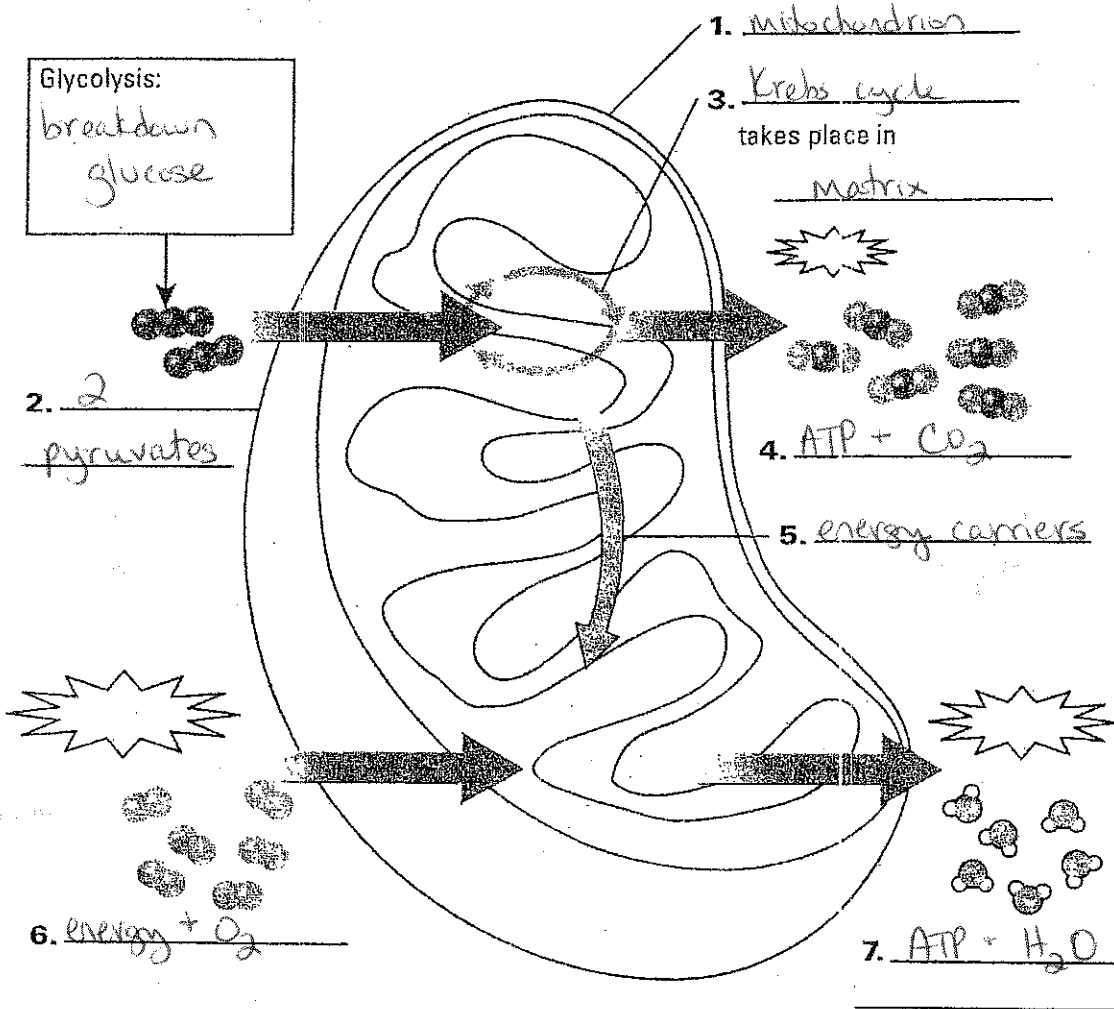
Period

Date

SECTION  
**4.4**

OVERVIEW OF CELLULAR RESPIRATION  
**Power Notes**

Cellular respiration:



Write the equation for cellular respiration.

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CHAPTER 4  
Cells and Energy