NAME _____

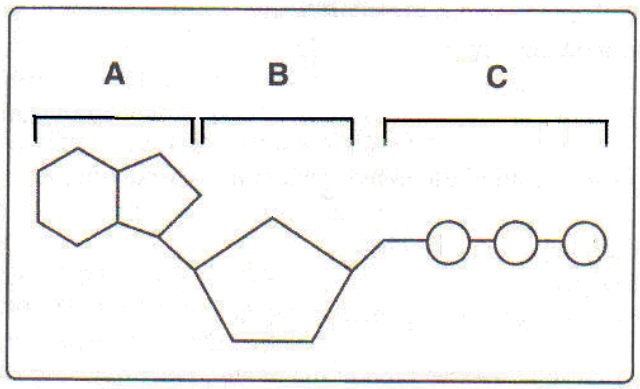
WHAT SHOULD I KNOW ABOUT PHOTOSYNTHESIS

Complete for Extra Credit on your Chapter Test

	GETS ENERGY FROM?	EXAMPLES
AUTOTROPH		
HETEROTROPH		

HUMANS ARE: MULTICELLULAR UNICELLULAR AUTOTROPHS HETEROTROPHS
(Circle TWO)

Which molecule is used by ALL living things to store and transfer energy? _____



What are the parts of an ATP molecule?

A = _____

B= _____

C = _____

Adding the phosphate onto ADP to make ATP _____ energy. STORES RELEASES
Removing the phosphate from ATP to make ADP _____ energy. STORES RELEASES

Which molecule is burned by all living things for energy? _____

Animal cells store glucose for later in their body cells/muscles/liver as _____

Plants store glucose for later in their roots as _____

Write the overall equation for photosynthesis IN WORDS?

Write the equation for photosynthesis USING NUMBERS AND CHEMICAL SYMBOLS:

Which gas molecule is used during the Calvin cycle to make glucose? _____

Which gas molecule is given off as a waste product during the light dependent reactions?

_____

NAME THE SCIENTIST	Contribution to our understanding of photosynthesis
	Showed plants produce oxygen only when exposed to light
	Carefully measured the mass of a growing plant and concluded the increase came from water
	Experimented with a plant, bell jar, and candle to show that plants make oxygen
	Received the Nobel prize for figuring out the biochemical pathway that produces glucose

Jan von Helmont concluded that increase in mass when plants grow bigger comes from water. What was "wrong" with his conclusion?

What is a pigment?

What is the main pigment used by green plants to absorb energy? _____

What are the 2 kinds of chlorophyll? _____ & _____

Which wavelengths of light are best absorbed by chlorophyll?

Plants "look green" because they ABSORB REFLECT green wavelengths of light.

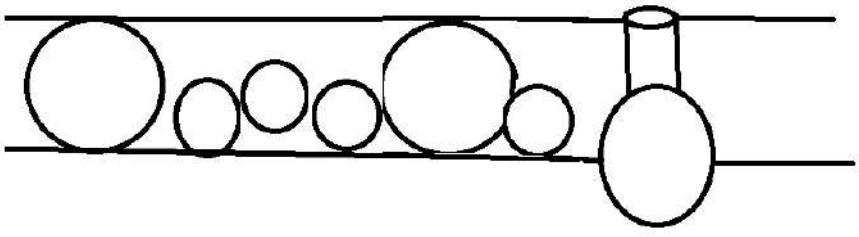
What are accessory pigments?

Give an example of an accessory pigment. _____

How do accessory pigments help chlorophyll?

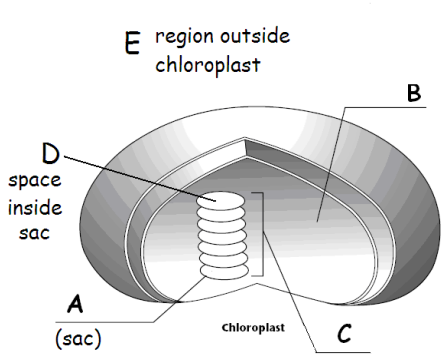
Why do we see red, orange, yellow colors in leaves in the fall?

LABEL PHOTOSYSTEM I, PHOTOSYSTEM II, ETC, and ATP SYNTHASE in the diagram below



Why does Photosystem II come before Photosystem I in the light-dependent reactions?

Label the parts of a chloroplast and tell where the reactions for photosynthesis happen.



A= _____

B= _____

C= _____

D= _____

E= _____

Place where ETC protein that carry out the light dependent reactions are located = _____

Place where ATP synthase is located = _____

Place where water is split during the light dependent reactions = _____

Place where Calvin cycle happens = _____

Place where H^+ ions build up during the light dependent reactions = _____

Write the equation that shows how $NADP^+$ is changed into NADPH.

Write the equation that shows how ADP is changed into ATP.

Where does the H that is added to make NADPH originally come from?

<u>PHOTOSYNTHESIS is made up of 2 PHASES:</u>

1. THE LIGHT-DEPENDENT REACTIONS capture energy from _____ and use it to make the power molecules _____ and _____.

2. THE LIGHT INDEPENDENT REACTIONS use the energy stored in _____ and _____ to join _____ from atmosphere to make _____.

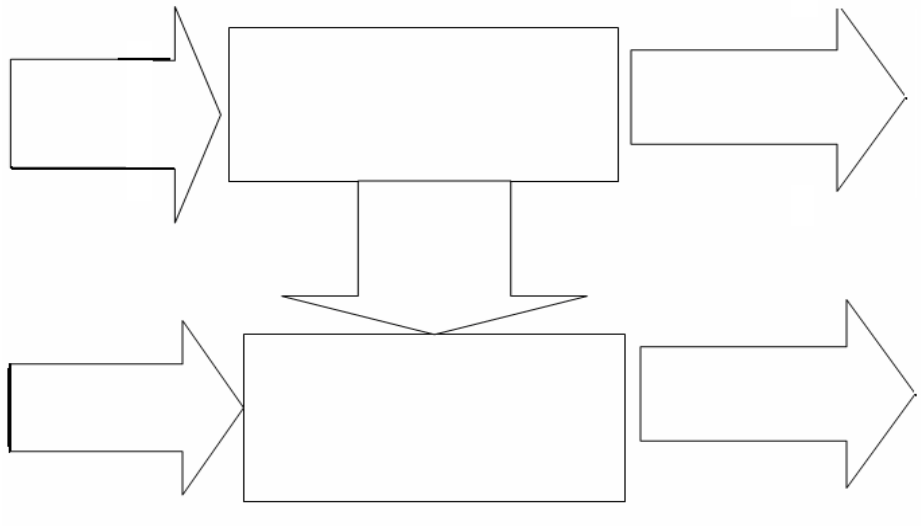
Where do replacement electrons come from to keep the light dependent reactions going?

How many times are electrons energized during the light dependent reactions?

Tell TWO (2) things that happen to put H^+ ions in the thylakoid space during the light dependent reactions.

1.
2.

FILL in the two parts of the Photosynthetic process AND the REACTANTS and PRODUCTS of each.



Which part of photosynthesis requires light? _____

Which part does not require light? _____

What is another name for the light independent reactions? _____Cycle

Which molecules produced by the light-dependent reaction provide energy during the Calvin cycle?

_____ & _____

What happens to the oxygen released when water is split during the light dependent reactions?

Where does the carbon in glucose originally come from?

Where does the oxygen in glucose originally come from?

Where does the hydrogen in glucose originally come from?

What are some environmental factors affect the rate of photosynthesis and how?