

Name: _____ Date: _____ Period: _____

Biology Semester 1: Final Exam Study Guide

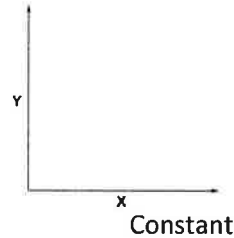
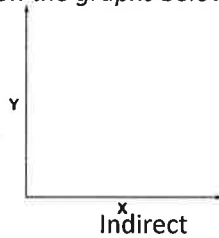
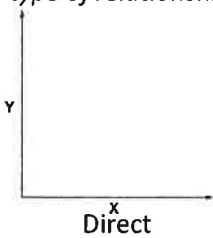
Test Date: _____

1. Graphing Terms/Relationships.

Define the following terms:

1. Independent Variable: _____
2. Dependent Variable: _____
3. Control: _____
4. Qualitative Data: _____
5. Quantitative Data: _____

Draw the type of relationship indicated on the graphs below.



Which axis would represent the independent variable? _____

Which axis would represent the dependent variable? _____

2. What are the characteristics of living things? Provide an example for each.

G: _____

R: _____

O: _____

R: _____

A: _____

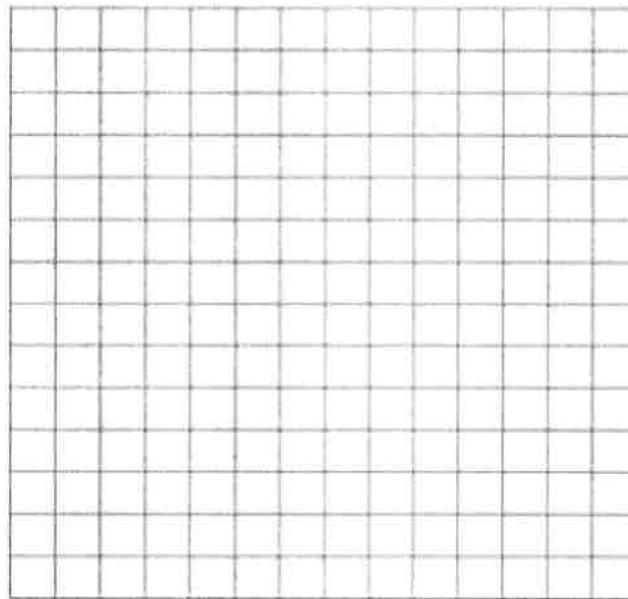
C: _____

E: _____

Desert iguanas are lizards that live in hot, dry conditions. Scientists measured the rate of oxygen consumption (intake) of desert iguanas at different body temperatures. Some of the results are shown in the table below.

Body temperature / °C	Mean rate of oxygen consumption at rest / $\text{cm}^3 \text{g}^{-1} \text{h}^{-1}$
25	0.4
30	0.7
35	1.2
40	1.5

Graph the data from the table above. Remember to label the x and y axis.

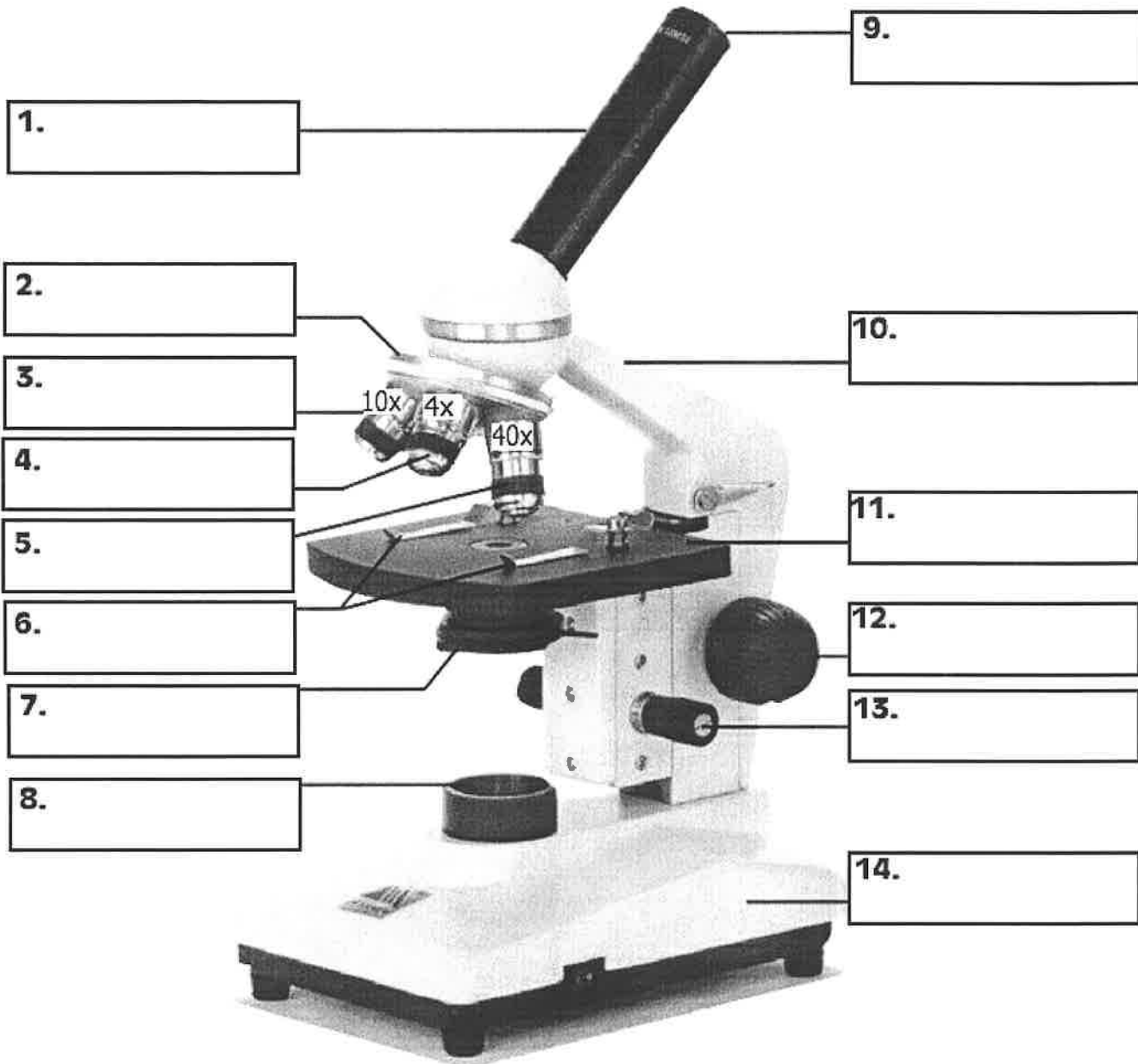


3. Levels of Organization: Fill in the blank and provide examples for each level below.

Least Complex $\xrightarrow{\hspace{15em}}$ Most Complex

Atom	Molecule	Cell				Organism
Examples	Examples	Examples	Examples Muscle Tissue	Examples Heart Stomach	Examples Digestive System Skeletal System	Examples

Microscope Labeling



Microscope Use:

15. When focusing a specimen, you should always start with the _____ objective.
16. When using the high power objective, only the _____ knob should be used.
17. The type of microscope used in most science classes is the _____ microscope.
18. You should carry the microscope by the _____ and the _____.
19. The objectives are attached to what part of the microscope (it can be rotated to click lenses into place?)

20. A microscope has an ocular objective of 10x and a high power objective of 50x, what is the microscope's total magnification? _____

4. Macromolecules

Macromolecule	Examples	Elements contained in the macromolecule	Monomer of Macromolecule	Function of the Macromolecule

All macromolecules are organic. What does this mean (What element must be present)? _____

What 2 body systems are most important to help carry/transport these nutrients throughout our body?

1. _____ 2. _____

5. Homeostasis

Define homeostasis:

NEGATIVE FEEDBACK	POSITIVE FEEDBACK
<i>Definition:</i>	<i>Definition:</i>
<i>Examples:</i>	<i>Examples:</i>

Most of the feedback mechanisms in the human body are _____ feedback
Positive or Negative

Review Questions:

1. Match the cell parts in the first column with the descriptions in the second column. Each cell part and description should be used only once.

Cell Structure	Description
A. Ribosome	<u>S</u> Anchors organelles, holds nucleus in place
B. Golgi apparatus	_____ Released by the Golgi apparatus, travels to the surface
C. Nucleolus	_____ of the cell to release its contents
D. Microtubules	_____ Synthesizes proteins
E. Cell membrane	_____ Where ribosomes are made
F. Rough ER	_____ Controls cell function and site of DNA storage
G. Centriole	<u>D</u> Allows movement of organelles within the cell
H. Transport vesicles	_____ Shuttles proteins between organelles
I. Mitochondrion	_____ Provides storage of water, chemicals, and wastes in
J. Flagella	_____ plant cells
K. Nucleus	_____ Controls passage of molecules in and out of the cell
L. Smooth ER	_____ Where proteins are made
M. Cell wall	<u>G</u> Organizes the spindle in cell division
N. Lysosome	_____ Converts solar energy to useable cell energy
O. Microfilament	<u>O</u> Allows contraction and movement of cells
P. Chloroplast	_____ Allows the cell to move in space
Q. Central vacuole	_____ Synthesizes and transports lipids
R. Chromosome	_____ Shapes plant cells
S. Intermediate	_____ Modifies and exports proteins
filaments	_____ Converts the energy from nutrients into ATP
T. Organelle	_____ Digests food vacuoles and damaged organelles
U. Secretory vesicles	_____ Stores genetic information, located in nucleus
	_____ General name for structures in the cytoplasm

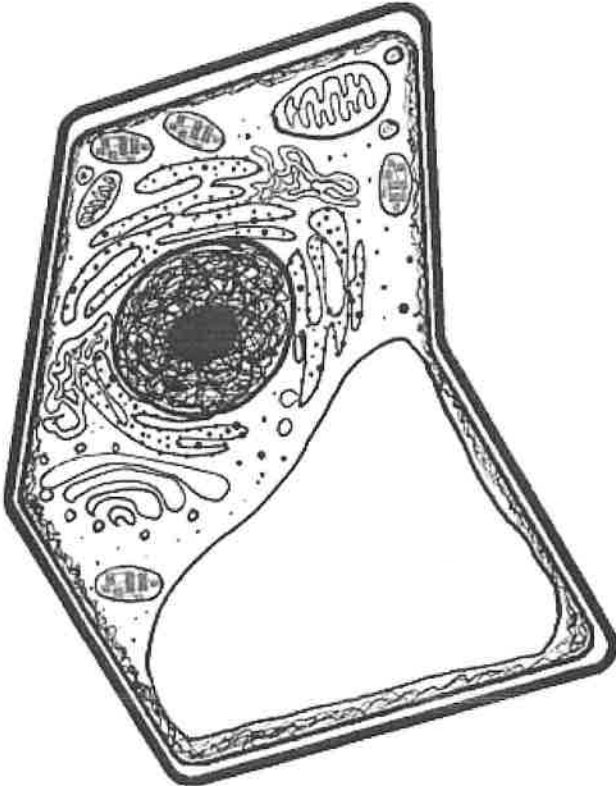
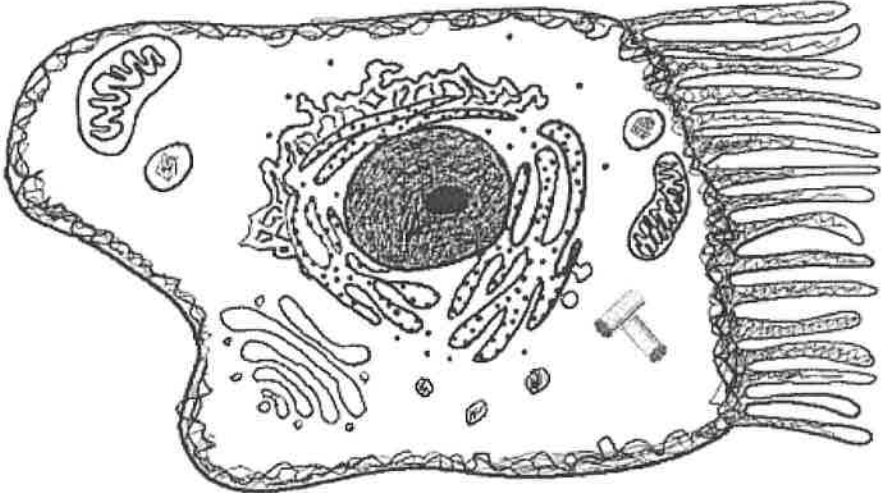
2. List seven differences between plant and animal cells.

3. Describe the steps by which a protein is first synthesized, and then exported by a cell.

4. Is the plasma membrane the outer boundary of all cells?

5. How might it benefit an organism to have the nucleus near the centre of its cells?

6. Label all the major structures in each of the following diagrams. Can you determine which cell is the plant cell and which cell is an animal cell?



6. Homeostasis-- Osmosis and Diffusion

Define the following terms:

Solute: _____

Solvent: _____

Solution: _____

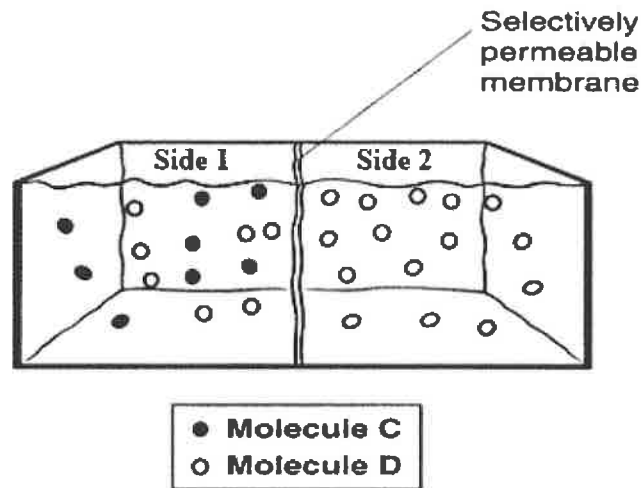
High Concentration: _____

Low Concentration: _____

Equilibrium: _____

Osmosis: _____

Diffusion: _____



A student put together the experimental setup shown above. The selectively permeable membrane between Side 1 and Side 2 allows movement of both types of molecules shown.

Which way would Molecule C move? _____

Which way would Molecule D move? _____

Why do we say that equilibrium is *dynamic*? _____

Osmosis and diffusion helps organisms to maintain homeostasis. Explain how it is useful in the following examples:

1. An individual eats a very salty meal. How would this affect osmosis in their body?

2. An individual is exercising and rapidly increasing their heartrate. How does diffusion help to regulate carbon dioxide and oxygen in their body?

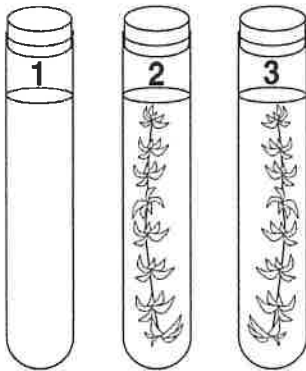
Photosynthesis Equation (in words):



Cellular Respiration Equation (in words):

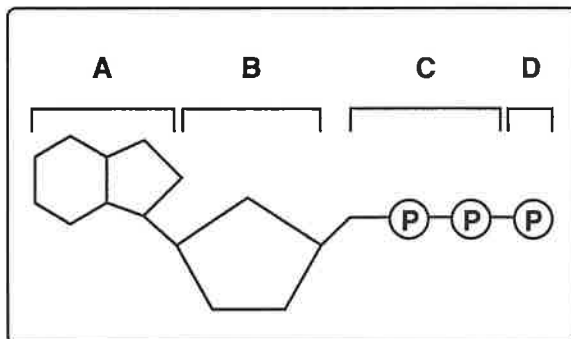


A student poured a solution of bromothymol blue indicator into three test tubes. Then, he placed an aquatic plant in two of the test tubes, as shown below. He placed a stopper on each test tube and placed them all in the dark for 24 hours. Bromothymol blue turns blue in the presence of O₂ and from blue to yellow in the presence of CO₂.



What would happen to test tube 2 and 3 if sunlight was added?

What would happen to test tube 2 and 3 if you exhaled into each using a straw?



What molecule is this? _____

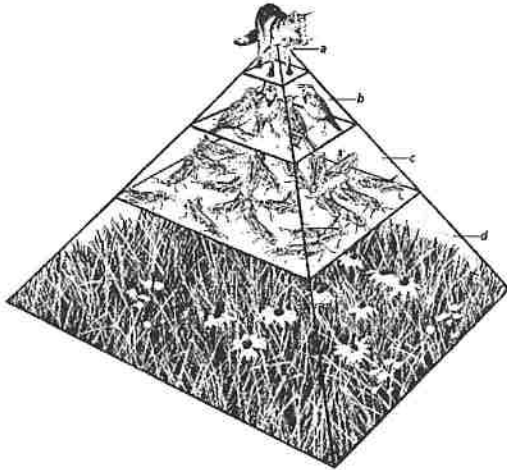
How is this molecule released?

What process creates this molecule?

The 3 steps of Cellular Respiration:

_____ → _____ → _____

Draw the arrows in the direction that energy flows and label each level with the amount of energy it obtains and whether it holds producers, primary consumers, secondary consumers, or tertiary consumers.



A: _____

B: _____

C: _____

D: _____

What happens to the energy that is not passed on to the next trophic level?

Write whether each increases (+) or decreases (-) the amount of CO₂ in the atmosphere:

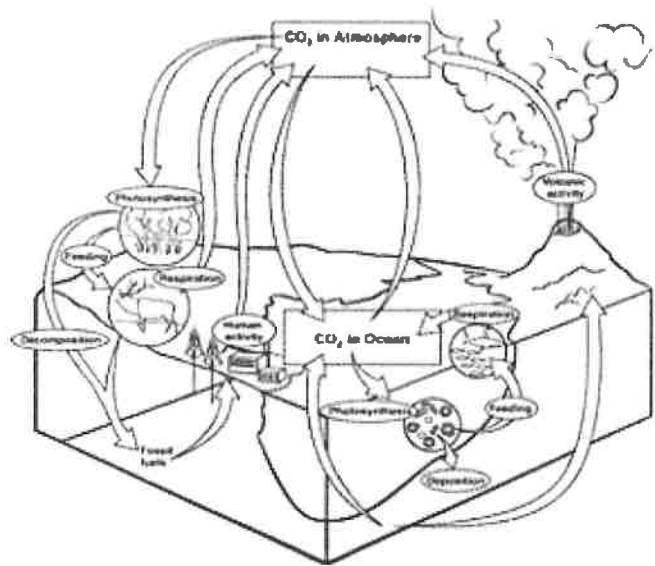
Ocean: _____

Photosynthesis: _____

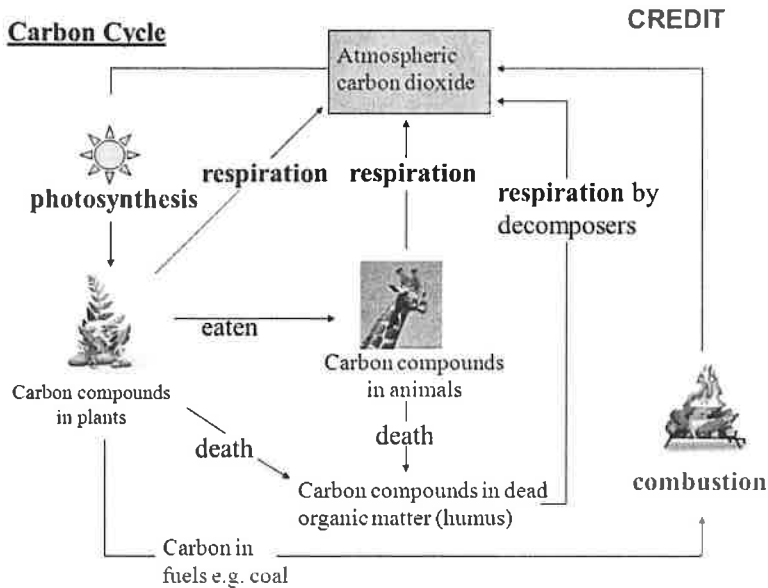
Volcanic Activity: _____

Human Activity: _____

Respiration: _____



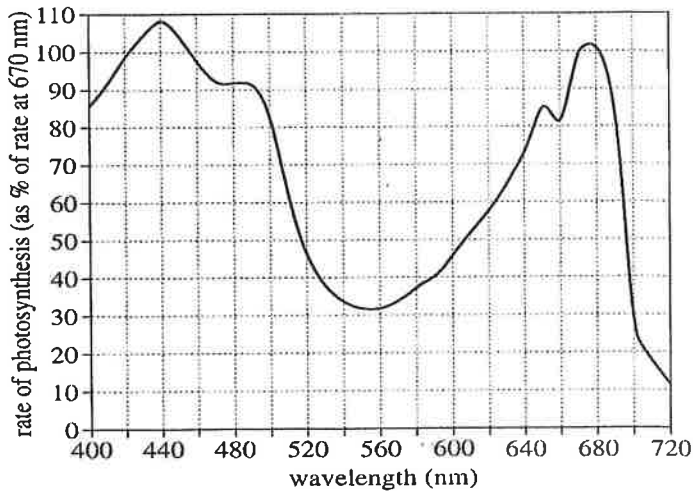
The Earth's carbon supply is a nutrient cycling process involving all living matter.



What processes in the carbon cycle add CO₂ to the atmosphere?

What process in the carbon cycle removes CO₂ from the atmosphere?

What does this process require? _____

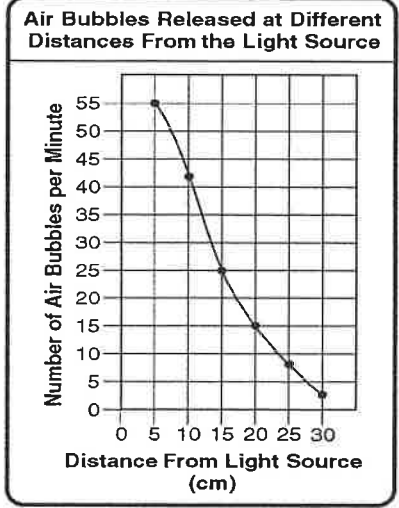
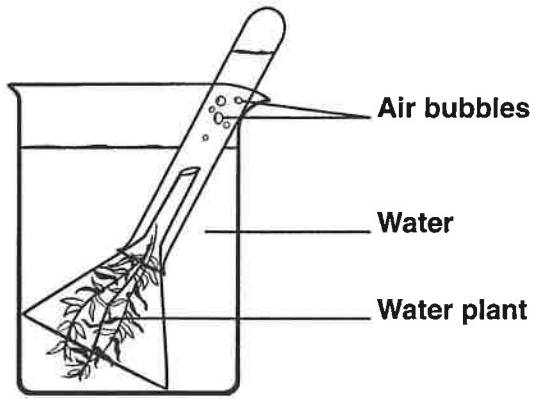


Color	Wavelength (nm)
Violet	380–430
Blue	430–500
Green	500–565
Yellow	565–585
Orange	585–630
Red	630–750

Using the above graph and table, which two pigments need to be absorbed to reach the highest rate of photosynthesis? _____

Using the graph and table, which pigment color is absorbed at 600 nm? _____

A student prepared two beakers with identical pieces of a water plant as shown below. She placed one beaker in the shade and the other beaker beside a fluorescent lamp. She then systematically changed the distance from the beaker to the lamp. She counted the bubbles given off by each piece of the water plant. Shown here is the graph of the data for the beaker she placed in the light.



Which distance from the light source produced 15 bubbles per minute? _____

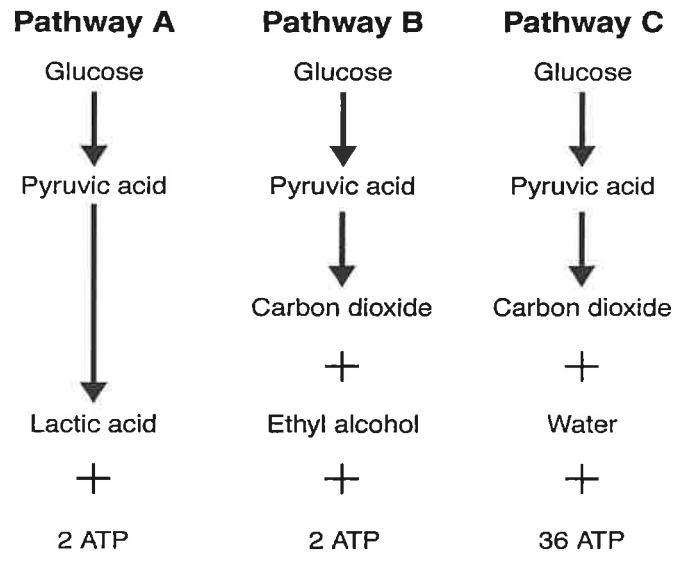
What are the air bubbles made of if they increase with the addition of light?

Label each pathway:

A: _____

B: _____

C: _____



Which pathways do not require oxygen?
