

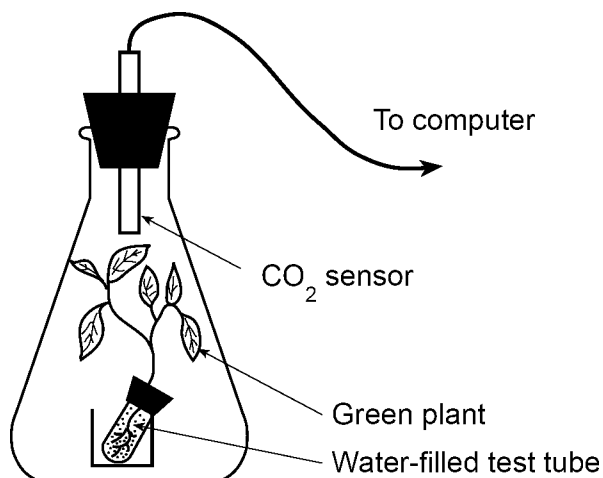
## Cell Respiration Star 2

Name: \_\_\_\_\_

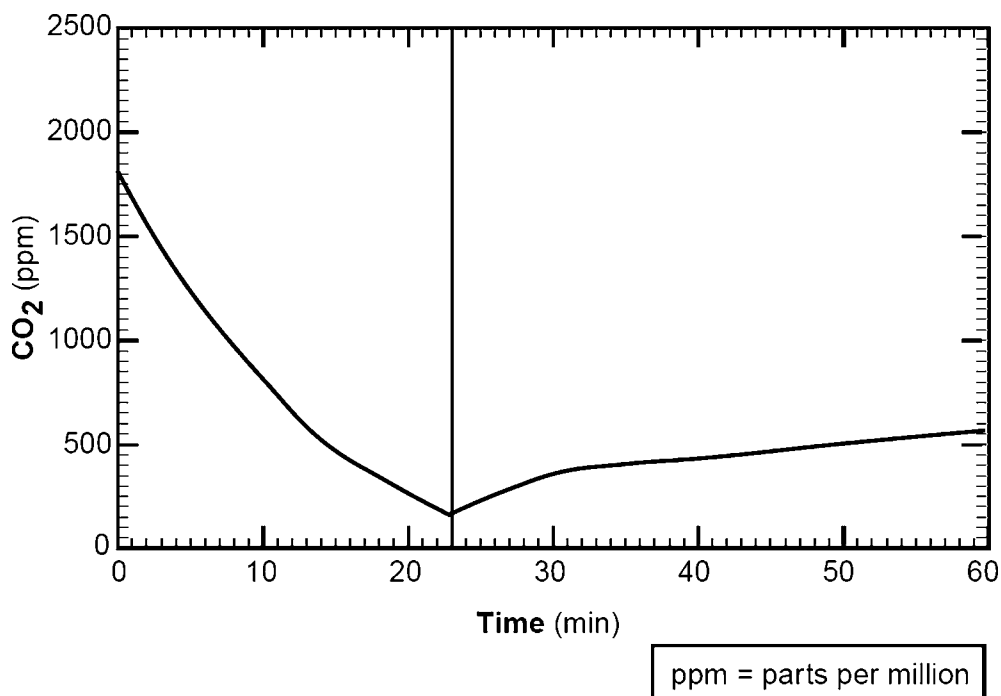
Date: \_\_\_\_\_

1. Base your answer(s) to the following question(s) on the provided information and on your knowledge of biology.

A small green plant was placed in a flask as shown below. A sensor that measures the CO<sub>2</sub> content of the air in the flask was inserted, and then the flask was sealed with a rubber stopper. The other end of the sensor was connected to a computer to monitor and record CO<sub>2</sub> levels in the flask over a period of time.



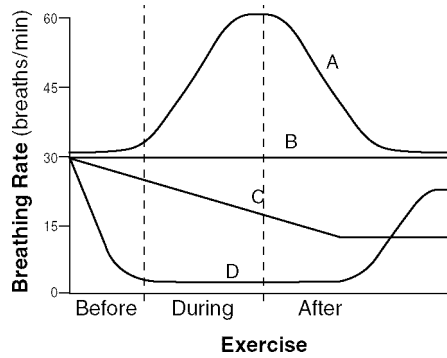
For part of the time the flask was placed in bright light and for part of the time it was placed in total darkness. The graph below shows data that were recorded by the sensor over a period of time.



Which condition most likely produced the effect on CO<sub>2</sub> level over the first 23 minutes?

- A. The light was on for the entire 23 minutes.
- B. The light was off for the entire 23 minutes.
- C. The light was off at the start and turned on after 10 minutes.
- D. The light could have been either on or off because it would have had no effect on the CO<sub>2</sub> level.

2. Which line in the graph below best illustrates an effect of the carbon dioxide level in the blood on breathing rate before, during, and after a period of exercise?

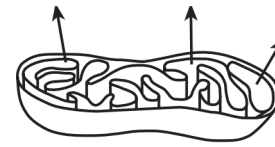


- A. A      B. B      C. C      D. D

3. Which statement best describes cellular respiration?

- A. It occurs in animal cells but not in plant cells.  
 B. It converts energy in food into a more usable form.  
 C. It uses carbon dioxide and produces oxygen.  
 D. It stores energy in food molecules.

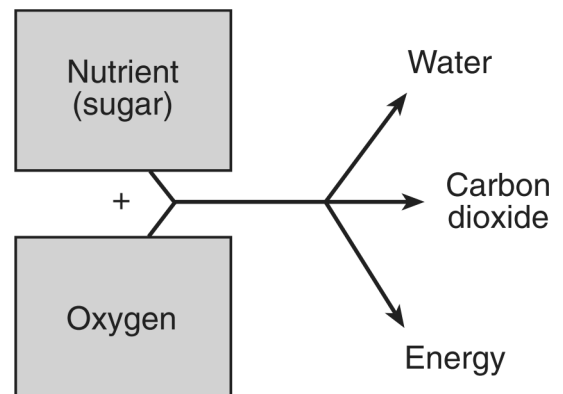
4. The diagram below represents a structure involved in cellular respiration. The release of which substance is represented by the arrows?



Mitochondrion

- A. glucose                      B. oxygen  
 C. carbon dioxide            D. DNA

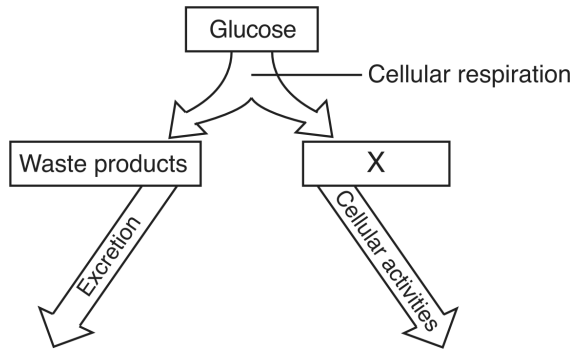
5. Base your answer(s) to the following question(s) on the diagram below and on your knowledge of biology. The diagram illustrates a process by which energy is released in organisms.



The energy released in this process was originally present in

- A. sunlight and then transferred to sugar  
 B. sunlight and then transferred to oxygen  
 C. the oxygen and then transferred to sugar  
 D. the sugar and then transferred to oxygen

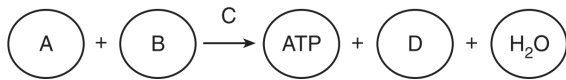
6. The diagram below represents a biochemical process.



Which molecule is represented by X?

- A. DNA                      B. starch  
C. protein                    D. ATP

7. A biological process that occurs in both plants and animals is shown below.



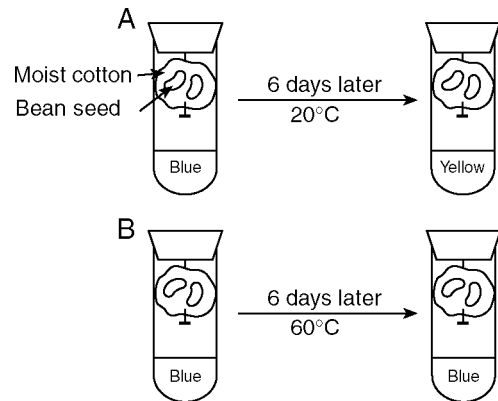
Which row in the chart below identifies the lettered substances in this process?

Row	A	B	C	D
(1)	O <sub>2</sub>	CO <sub>2</sub>	glucose	enzymes
(2)	glucose	O <sub>2</sub>	enzymes	CO <sub>2</sub>
(3)	enzymes	O <sub>2</sub>	CO <sub>2</sub>	glucose
(4)	glucose	CO <sub>2</sub>	enzymes	O <sub>2</sub>

- A. (1)    B. (2)    C. (3)    D. (4)

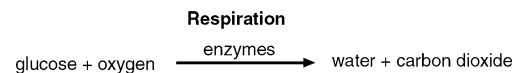
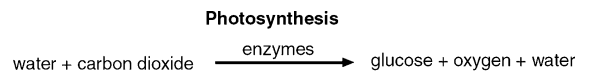
8. Base your answer(s) to the following question(s) on the information and diagram below and on your knowledge of biology.

Two test tubes, A and B, were set up as shown in the diagram below. Bromthymol blue, which turns from blue to yellow in the presence of carbon dioxide, was added to the water at the bottom of each tube before the tubes were sealed. The tubes were maintained at the temperatures shown for six days. (Average room temperature is 20°C.)



Identify the life process responsible for the change in tube A.

9. Base your answer(s) to the following question(s) on the summary equations of two processes and on your knowledge of biology.



State *one* reason *each* of the two processes is important for living things.

Photosynthesis:

Respiration:

10. Base your answer(s) to the following question(s) on the word equations below and on your knowledge of biology. The equations represent two biochemical processes that occur in living organisms. The letter *X* represents a molecule produced from process 1.

Process 1: oxygen + glucose → carbon dioxide + water + *X*

Process 2: carbon dioxide + water → oxygen + glucose

Identify the molecule represented by letter *X* in process 1.

1.  
Answer: A
2.  
Answer: A
3.  
Answer: B
4.  
Answer: C
5.  
Answer: A
6.  
Answer: D
7.  
Answer: B
8.  
Answer: cellular respiration or respiration
9.  
Answer: Photosynthesis: – glucose produced is basis of all food chains – O<sub>2</sub> released is needed by aerobic organisms – changes light energy to chemical energy  
Respiration: – supplies energy for metabolism – supplies CO<sub>2</sub> for photosynthesis
10.  
Answer: ATP *or* adenosine triphosphate.