

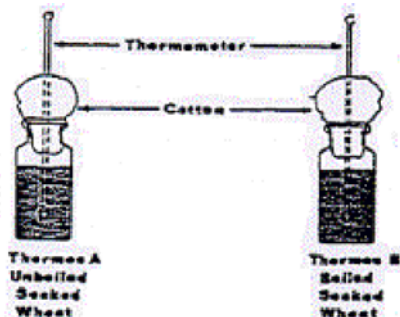
Standard 2 Objective 2 Describe the flow of energy and matter in cellular function

19 Question(s)
Test ID: 2142483949

Name: _____

Date: _____

- 1) Respiration is to carbon dioxide as photosynthesis is to
 - A. carbon dioxide
 - B. oxygen
 - C. light
 - D. nitrogen
- 2) Which of the following words includes all of the other words?
 - A. Cellular respiration
 - B. Photosynthesis
 - C. Protein synthesis
 - D. Metabolism
 - E. DNA replication
- 3) Why are cells dependent on outside sources of organic molecules that can be used to produce energy? Cells are dependent because...
 - A. cells are not capable of producing their own energy molecules
 - B. it takes more energy to make molecules than the cell gets from breaking them down
 - C. the cell's Golgi apparatus cannot function alone
 - D. cells are not capable of synthesizing inorganic molecules
- 4) As a person exercises, the need for oxygen in the muscles increases. What is the best reason for this?
 - A. Oxygen is necessary in the muscles to move the carbon dioxide out
 - B. Oxygen is necessary for the increased production of ATP
 - C. Increased oxygen cools down overheated muscles
 - D. Oxygen is a component of water, which leaves the body in the form of sweat
- 5) Compare 2 tanks (same size) in a classroom. One has aquatic plants and trout in it. The other has a similar amount of aquatic plant in it, but not trout. Why would the dissolved oxygen level in the tank with the fish be lower than the dissolved oxygen level in the tank without fish?
 - A. The tank with the fish and the plants has less because the fish use up the dissolved oxygen
 - B. Plants in the tank with fish give off less oxygen
 - C. The absence of animals in the tank with only plants reduces the oxygen level
 - D. There is less space in the tank with both plants and animals, thus the plants produce less oxygen
- 6) Refer to the following investigation to answer the question below:



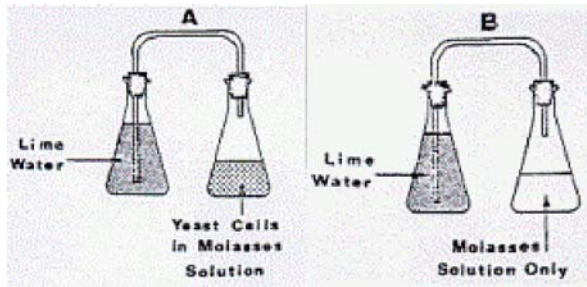
Two samples of wheat seeds were placed in thermos containers with thermometers inserted to record temperature change. One sample was boiled for ten minutes. Both samples were soaked in water before being placed into containers. Then they were left in the containers for 3 days and temperatures were recorded three times daily.

Which of the following hypotheses could be tested with this design?

- A. unboiled wheat seeds do not require O₂
- B. Soaking wheat seeds in water makes them germinate faster
- C. germinating wheat seeds emit heat energy

D. germinating wheat seeds emit CO₂

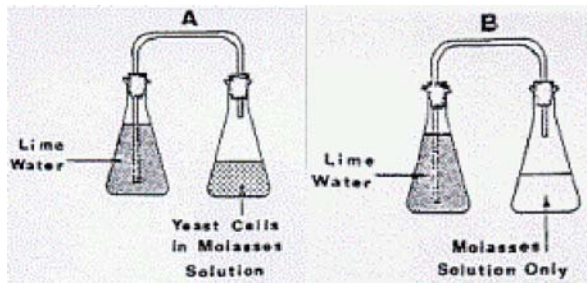
7) Refer to the following investigation to answer the question below.



Both of the above set-ups (A and B) were placed in a warm place and after a few hours, the lime water in set-up A turned milky. The lime water in set-up B remained clear. This indicates that carbon dioxide was produced in set-up A. Which set-up acted as a control for this experiment?

- A. set-up A
- B. set-up B
- C. both set-up A and B
- D. there is no control for this experiment

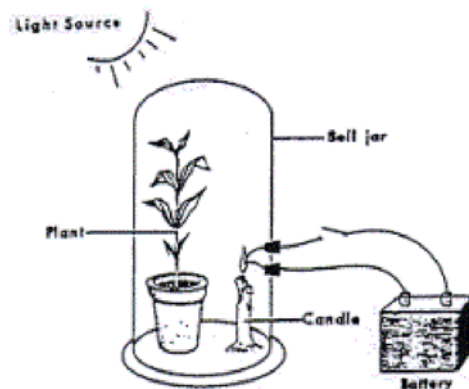
8) Refer to the following investigation to answer the question below.



Both of the above set-ups (A and B) were placed in a warm place and after a few hours, the lime water in set-up A turned milky. The lime water in set-up B remained clear. This indicates that carbon dioxide was produced in set-up A. What is the variable in this investigation?

- A. carbon dioxide
- B. oxygen
- C. yeast
- D. molasses

9) The question below is based on the following diagram and information.



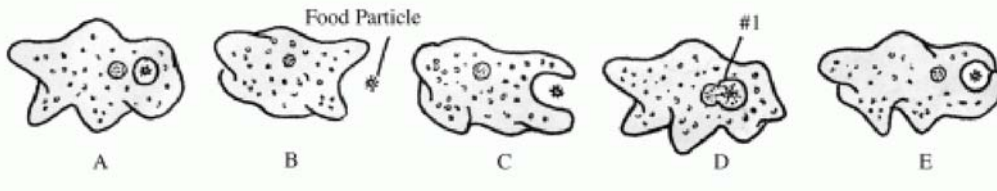
A plant and a candle were placed beneath an airtight bell jar in light as shown. After three days later the candle was ignited by means of an electrical apparatus and burned for a minute before going out.

Before any conclusions can be made about the effect of the plant on the air, this investigation should be repeated with which change?

- A. omit the plant
- B. omit the candle
- C. use a larger bell jar
- D. use a different species of plant

10) The figure shows an amoeba at different stages engulfing a food particle. Use the diagram to answer the question.

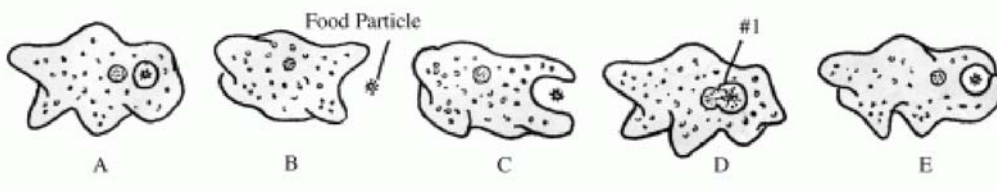
Which of the following puts the pictures in the correct sequence?



- A. A E C B D
- B. B C E A D
- C. B D E D A
- D. C B D E A
- E. C D E A B

11) The figure shows an amoeba at different stages engulfing a food particle. Use the diagram to answer the question.

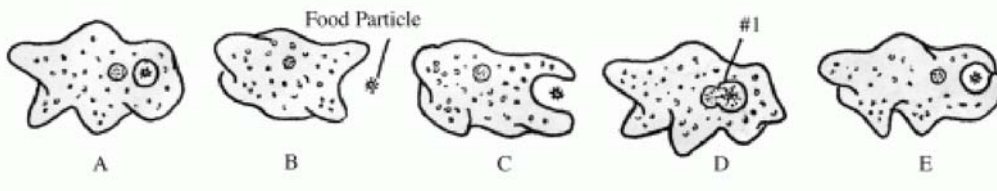
What is this sequence of pictures an example of?



- A. Photosynthesis
- B. Respiration
- C. Exocytosis
- D. Passive transport
- E. Active transport

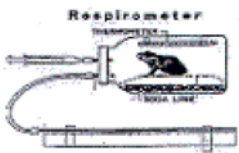
12) The figure shows an amoeba at different stages engulfing a food particle. Use the diagram to answer the question.

What process is occurring at #1?



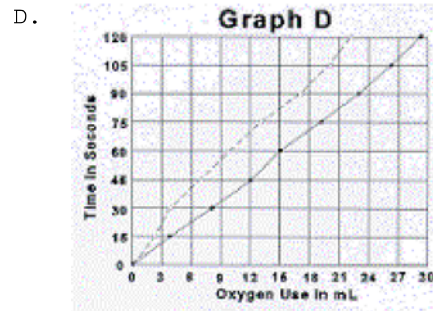
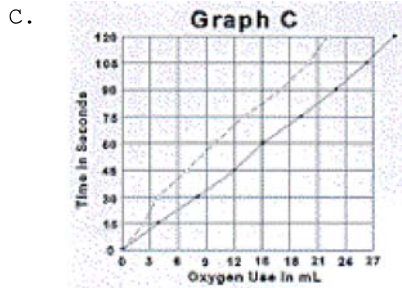
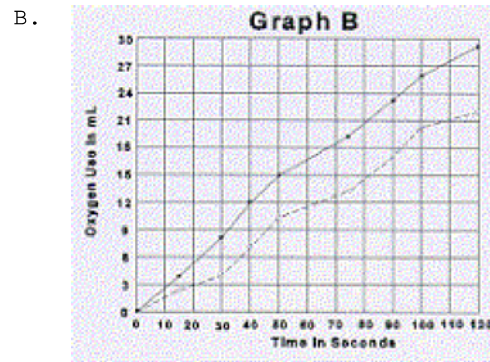
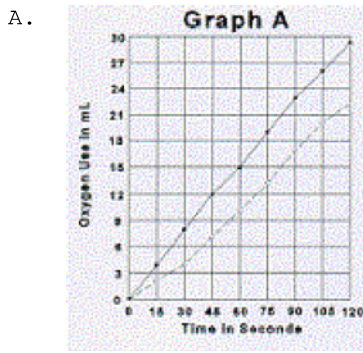
- A. Waste is being expelled from the cell
- B. The lysosome and food vacuole are joining to digest the food particle
- C. The cytoplasm is flowing into the food vacuole
- D. The cell membrane is engulfing a food particle
- E. The amoeba is going through cell division

13) The instrument shown is a respirometer. It is used to measure the rate of oxygen used by small animals. The data in the table below were collected by using a gerbil and a frog, which were essentially equal in weight. The data show their oxygen use over a two minute period. Select the graph that best represents the data in the table.



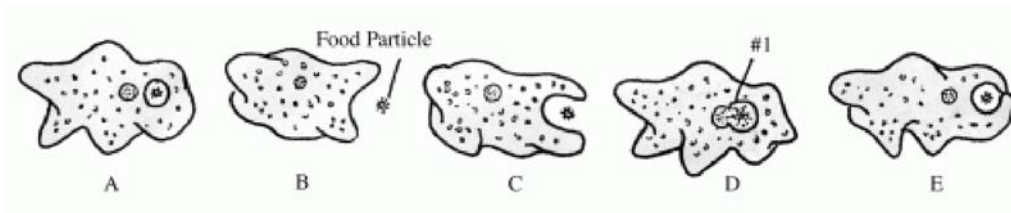
Oxygen Use in Milliliters per 15 second Intervals

Time in seconds	0	15	30	45	60	75	90	105	120	Key
Gerbil O ₂ Use	0	4	8	12	15	19	23	26	29	—————
Frog O ₂ Use	0	2	4	7	10	13	17	20	22	- - - - -



- 14) The figure shows an amoeba at different stages engulfing a food particle. Use the diagram to answer the question.

Look at picture C. If we changed the food particle to a dust particle, predict what the next picture in the sequence would look like.



- A. Picture A
 B. Picture B
 C. Picture C
 D. Picture D
 E. Picture E
- 15) What would probably be the best sources to investigate if you wanted to learn the most up-to-date information about the chemistry of photosynthesis?
- A. Your biology textbook.
 B. Tuesday's "New York Times" newspaper.
 C. Searching the internet for the topics, "Plant and Animal Food Sources"
 D. A U.S. News and World Report magazine article dated January 2, 2000 named, "Plants -- The Food Engine of the Universe."
- 16) In 1643 Jan van Helmont discovered that a tree's mass is mostly water. In 1771 Joseph Priestley discovered oxygen. In 1779 Jan Ingerhousz determined that plants need sunlight to produce oxygen. In 1845 Julius Mayer proposed that plants convert light energy to chemical energy. In 1948 Melvin Calvin traced the chemical path that carbon follows to make glucose. Which statement best describes this paragraph?
- A. The knowledge learned by these scientists is not related and each field of research needs to be studied separately.
 B. The knowledge learned by scientists over the years has helped to contribute to the current knowledge of photosynthesis.
 C. A lot of people have studied photosynthesis and we still do NOT understand how it makes sugar.
 D. The knowledge learned by scientists in the 1600s and 1700s does not have value since their technology was so poor and experiments could not be verified.
- 17) Which process most precisely identifies the process which produces energy for life's activities?
- A. circulation
 B. chemical digestion
 C. excretion
 D. cellular respiration

- 18) In the 1600s, the Belgian physician Jan Van Helmont, concluded growing trees gain most of their mass from water. In the 1700s, the English minister Joseph Priestley, discovered oxygen. The Dutch scientist Jan Ingenhousz discovered light is necessary for the formation of oxygen bubbles from plants. These experiments helped us to learn that in the presence of light, plants transform carbon dioxide and water into sugar and oxygen in the process of photosynthesis. How does this paragraph explain how the actual process of photosynthesis was discovered?
- A. Scientific explanations of processes are developed from the works of many researchers.
 - B. Scientific work from the 1600s is considered to be invalid because we have better methods of performing scientific research today.
 - C. Scientists are dishonest when they test others scientists' research and hypotheses.
 - D. Scientists studying photosynthesis wasted their time since it does not directly affect human life.
- 19) In the 1600s, the Belgian physician Jan Van Helmont concluded that growing trees gain most of their mass from water. In the 1700s, the English minister Joseph Priestley discovered oxygen. The Dutch scientist Jan Ingenhousz discovered light is necessary for the formation of oxygen bubbles from plants. These experiments helped us to learn that in the presence of light, plants transform carbon dioxide and water into sugar and oxygen in the process of photosynthesis. What does this tell us about the nature of science?
- A. Each discipline of scientific study is independent of other disciplines.
 - B. Scientists are dishonest because they take other scientists' findings to do research.
 - C. It takes research from many different disciplines to solve a problem.
 - D. Only the work of physicians matters since they are the only scientists concerned with the quality of human life.

