

Photosynthesis

True/False

Indicate whether the sentence or statement is true or false.

- 1. All organisms require energy to carry out life processes.
- 2. Heterotrophic organisms use light energy to make organic compounds.
- 3. Autotrophs make their own organic molecules by using energy from inorganic materials or sunlight.
- 4. Most plants are heterotrophic.
- 5. ATP is a portable form of “energy currency” inside cells.
- 6. ATP is a nucleotide with two carbohydrate groups.
- 7. The major light-absorbing pigment in plant photosynthesis is chlorophyll.
- 8. Plant cells use light energy to make ATP and NADPH.
- 9. As light intensity increases indefinitely, the rate of photosynthesis increases indefinitely.
- 10. CAM and C4 photosynthetic plants are better adapted to hot, arid climates.

Multiple Choice

Identify the letter of the choice that best completes the statement or answers the question.

- 11. Most of the energy used by life on Earth comes from
 - a. the sun.
 - b. the rotation of the Earth.
 - c. the moon.
 - d. None of the above

- 12. Heterotrophs are organisms that
 - a. produce food from inorganic molecules or sunlight.
 - b. can survive without energy.
 - c. must consume other organisms to get energy.
 - d. None of the above

- ___ 13. Energy is required for a variety of life processes including
- growth and reproduction.
 - movement.
 - transport of materials across cell membranes.
 - All of the above
- ___ 14. When a phosphate group is removed from an ATP molecule,
- a substantial amount of energy is released.
 - an enzyme is formed.
 - energy is stored.
 - activation energy is increased.
- ___ 15. The major atmospheric by-product of photosynthesis is
- nitrogen.
 - carbon dioxide.
 - water.
 - oxygen.
- ___ 16. When electrons of a chlorophyll molecule are raised to a higher energy level,
- they become a photon of light.
 - they form a glucose bond.
 - they enter an electron transport chain.
 - carotenoids are converted to chlorophyll.
- ___ 17. Chlorophyll is green because
- it absorbs green wavelengths of light.
 - it absorbs blue and yellow wavelengths, which make green.
 - it reflects green wavelengths of light.
 - of an optical illusion caused by transmitted light.
- ___ 18. The process in which plants capture energy and make organic molecules is known as
- homeostasis.
 - evolution.
 - photosynthesis.
 - development.
- ___ 19. The source of oxygen produced during photosynthesis is
- carbon dioxide.
 - water.
 - the air.
 - glucose.

- ___ 20. While one type of electron transport chain is used to form molecules of ATP, a second electron transport chain is used
- in forming molecules of NADPH.
 - to migrate to another proton pump.
 - to produce water.
 - as a fuel for forming another chlorophyll molecule.
- ___ 21. Proton pumps found in the thylakoid membranes are directly responsible for
- Creating a concentration gradient of H^+ for the manufacturing of NADPH and ATP
 - providing the energy to produce sugars
 - producing $NADP^+$.
 - generating glucose molecules.
- ___ 22. NADPH is important in photosynthesis because it
- becomes oxidized to form NADP.
 - is needed to form chlorophyll.
 - provides additional oxygen atoms.
 - carries high-energy electrons needed to produce organic sugar molecules.
- ___ 23. light energy : Light Reactions ::
- entropy : potential energy
 - proton : electron
 - ATP and NADPH : Calvin Cycle
 - energy : food
- ___ 24. The energy used in the Calvin cycle for the production of carbohydrate molecules comes from
- ATP only.
 - the Krebs cycle.
 - ATP and NADPH.
 - carbon dioxide.

