

## 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.

