Photosynthesis Practice

Choose one answer per question. Circle A, B, C, or D.

1. Which part of a green leaf cell should you label as the main site of photosynthesis?
   A. Chloroplast
   B. Nucleus
   C. Mitochondrion
   D. Central vacuole

2. A model of photosynthesis shows arrows for sunlight, water, and carbon dioxide. What does the sunlight arrow represent?
   A. A gas that leaves the leaf
   B. Atoms that become part of the sugar
   C. Energy that powers the process
   D. Water moving into the roots

3. What are the tiny openings in a leaf surface that can widen or narrow to regulate gas exchange?
   A. Veins
   B. Stomata
   C. Root hairs
   D. Guard cells

4. A diagram shows one gas leaving a leaf as a product of photosynthesis. Which gas belongs on that arrow?
   A. Water vapor
   B. Carbon dioxide
   C. Nitrogen
   D. Oxygen

5. Water absorbed by a plant’s roots travels up through the stem. Which tissue carries this water to the leaves for processes such as photosynthesis?
   A. Phloem
   B. Xylem
   C. Cuticle
   D. Palisade mesophyll

6. A healthy leaf looks green in white light. Which pattern of light reflection by chlorophyll helps explain that color?

A. It reflects more green light than red or blue light.
B. It reflects more red light than green or blue light.
C. It reflects more blue light than red or green light.
D. It reflects the same amount of red, blue, and green light.

7. A student sees water and carbon dioxide on the input side of a photosynthesis model. Which input supplies the oxygen atoms in the oxygen gas released?

A. Neither water nor carbon dioxide
B. Carbon dioxide only
C. Both water and carbon dioxide
D. Water only

8. A mature leaf in the sun is making more sugar than it needs. A growing root tip below ground needs sugar. Which route can carry sugars to that root tip?

A. From the root tip to the mature leaf through phloem
B. From the mature leaf to the root tip through xylem
C. From the mature leaf to the root tip through phloem
D. From the root tip to the mature leaf through xylem

9. A seed forms on a parent plant and stores some of the sugars the parent made. In what form can a plant store those sugars for the seedling to use after germination?

A. Starch
B. Cellulose
C. Chlorophyll
D. Oxygen

10. A leaf partly closes its stomata during a dry period. What two immediate effects would you expect through those openings?

A. More water vapor leaves, and more carbon dioxide can enter.
B. Less water vapor leaves, and more carbon dioxide can enter.
C. More water vapor leaves, and less carbon dioxide can enter.
D. Less water vapor leaves, and less carbon dioxide can enter.

11. In a fictional leaf model, photosynthesis makes 7 units of oxygen during one interval and respiration uses 7 units. No other process changes oxygen. What is the net change?

A. A loss of 7 units, with both processes active.
B. A gain of 7 units, with both processes active.
C. Zero units, with both processes active.
D. Zero units, with both processes stopped.

12. During the same fictional time interval, a leaf with 3 cm^2 of area makes 12 oxygen units from photosynthesis. A leaf with 8 cm^2 makes 24 units. Which makes more per cm^2?

A. The larger leaf, at 4 units per cm^2 versus 3.
B. The smaller leaf, at 4 units per cm^2 versus 3.
C. The larger leaf, at 24 units per cm^2 versus 12.
D. Both make the same amount per cm^2.

13. In a chloroplast model, the light-dependent stage makes less ATP and NADPH while carbon dioxide stays available. Why could the sugar-building stage slow?

A. It captures sunlight directly and sends ATP and NADPH to the first stage.
B. It uses ATP and NADPH as its source of carbon atoms.
C. It needs to produce oxygen before ATP and NADPH can arrive.
D. It relies on ATP and NADPH from the light-dependent stage.

14. In a fictional model with other conditions fixed, photosynthesis rates are 2, 5, 8, and 8 units at light levels 1, 2, 3, and 4. Which conclusion follows from these readings?

A. More light raises the rate at first, and the rate stays the same from level 3 to 4.
B. The rate increases by the same amount at every step in light level.
C. Photosynthesis stops at level 4 because the rate stops increasing.
D. The plateau identifies carbon dioxide as the specific cause of the limit.

15. A fictional model lists photosynthesis rates with less and more carbon dioxide. In dim light they are 3 and 4. In bright light they are 5 and 11. Other settings match. Under which light setting does more carbon dioxide give a larger gain?

A. Bright light, by 8 units versus 2 in dim light.
B. Dim light, by 6 units versus 1 in bright light.
C. Bright light, by 6 units versus 1 in dim light.
D. Both light settings give an increase of 7 units.