Cellular Respiration

Real World Energy
Learner Worksheet Answer Key
Grade Level: 9-12

Name:

Read the cellular respiration backgrounder and answer the following questions.

1. **Describe five differences between respiration and photosynthesis.**
   Photosynthesis/Respiration
   - requires carbon dioxide and water/requires oxygen and glucose
   - produces oxygen/produces carbon dioxide and water
   - light energy is trapped by chlorophyll/energy is released
   - occurs in light/occurs in both light and darkness
   - only cells with chlorophyll photosynthesize/all living cells respire

2. **What is the simple sugar involved in cellular respiration?**
   Glucose is the simple sugar involved in cellular respiration.

3. **What life processes require the energy that is harvested from glucose through aerobic respiration?**
   The life processes that require energy harvested from glucose are: movement, making proteins, cell growth, transporting substances and reproduction.

4. **Describe the difference between how plants and animals obtain glucose.**
   Plants obtain glucose from photosynthesis, and animals obtain glucose from eating items that contain glucose (e.g., plants).

5. **Explain the difference between aerobic and anaerobic respiration.**
   Aerobic respiration occurs in the presence of air; anaerobic respiration occurs in the absence of air.

6. **What is another name for anaerobic respiration?**
   Another name for anaerobic respiration is fermentation.

7. **During strenuous exercise our bodies require energy. Explain the role of cellular respiration in providing this energy.**
   For our bodies to move during strenuous exercise, energy is required. Aerobic respiration is harvesting the energy from glucose to provide the energy for our muscle cells to move.

8. **Understanding cellular respiration has allowed us to utilize this process for other purposes. Write a short paragraph describing how utilizing cellular respiration has reduced our environmental impact.**
   Short paragraphs will vary but should include the following points:
   - Aerobic respiration is used to break down the waste in sewage treatment plants.
   - Large shallow tanks are stirred and aerated to provide a lot of oxygen to maximize aerobic respiration.
   - Using this process has reduced the amount of waste that enters our freshwater supplies.