**Lesson 3: Cell Respiration Is the Opposite of Photosynthesis**

**Answer KEY**

1. Complete the photosynthesis reaction below:

*CO2 + H2O + sunlight energy → C6H12O6 + O2*

2. Sketch a mitochondrion here and label its parts:

*Diagram should include outer membrane, inner membrane, cristae, and matrix.*

3. How is the structure of mitochondria useful for carrying out cell respiration?  
*All of the folds of the cristae allow the small mitochondria to do as much work as possible in a small space.*

4. Complete the cell respiration reaction below:

*C6H12O6 + O2 → CO2 + H2O + ATP*

5. Write the reaction for cell respiration in the form of a sentence:

*Glucose combines with oxygen to yield carbon dioxide, water, and energy.*

6. Complete the T-chart to compare cell respiration and photosynthesis:

|  |  |
| --- | --- |
| **Cell Respiration** | **Photosynthesis** |
| *Uses food for plant energy.*  *Releases energy.*  *Uses oxygen.*  *Produces water.*  *Produces carbon dioxide.*  *Takes place in all cells.* | *Produces food.*  *Stores energy.*  *Produces oxygen.*  *Uses water.*  *Uses carbon dioxide.*  *Takes place in cells with chloroplasts.* |

7. How is cell respiration the opposite of photosynthesis?

*The equations are backwards. Photosynthesis requires carbon dioxide and water, in the presence of sunlight, to produce glucose and oxygen. Cellular respiration requires oxygen and glucose and produces water, carbon dioxide, and ATP (energy).*