Transport
1. Xylem conducts __________________ from ______________ to ____________________.
   Phloem conducts __________________ from ______________ to ____________________.
2. If the xylem of a young plant is damaged, which process is interrupted?
3. Why would having vascular tissue allow a plant to live away from water?

Evolution
a) What trait(s) separates mosses from ferns, conifers, and flowering plants?
b) Why must mosses and ferns live near water sources?
c) What is the advantage that conifers and flowering plants have over ferns?
d) Why would flowers be considered an evolutionary advantage?

Adaptations
1. Identify structure X in the images above and explain its function.
2. If this structure were damaged and remained closed, what would the impact be on photosynthesis?
3. Explain how this structure can help a plant maintain homeostasis in a dry climate.
4. Structure A is made of a lipid and covers the surface of leaves; what is it called and what is its function?

Reproduction
1. In which structure(s) does meiosis occur?
2. What is the primary function of a flower?
3. What method of reproduction is this?
4. Compare the DNA of the offspring to the parent plant in both reproduction styles above.
5. How would this be different from offspring produced from a flowering plant?

Cell Energy- General Knowledge
Structure: ________________
Function: ________________
Structure: ________________
Function: ________________

For the equations below **CIRCLE** the reactants and **BOX** the Products

**Photosynthesis**

\[ 6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow 6\text{O}_2 + \text{C}_6\text{H}_{12}\text{O}_6 \]

**Cellular Respiration**

\[ \text{O}_2 + \text{C}_6\text{H}_{12}\text{O}_6 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O} + \text{ATP} \]
Cell Energy – Putting it all together

1. Identify one type of organism that carries out process 1. ________________________________

2. Explain why process 2 is essential in humans. _________________________________________

3. Identify process 3. ______________________________________________________________

4. Identify molecule X. ____________________________________________________________

Photosynthesis- Application

An experiment was set up to test the effect of light intensity on photosynthesis, as shown below. Data was collected by counting gas bubbles released in a 5-minute period when the light source was at various distances. The data is shown in the table below.

<table>
<thead>
<tr>
<th>Distance From Light (cm)</th>
<th>Bubbles in 5-Minute Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>27</td>
</tr>
<tr>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>30</td>
<td>13</td>
</tr>
<tr>
<td>45</td>
<td>6</td>
</tr>
</tbody>
</table>

1. Based on the experimental set up, what gas was being collected?

2. Which gas would most likely be found in the greatest amount in the bubbles?
   - A. Oxygen
   - B. Nitrogen
   - C. Carbon Dioxide
   - D. Ozone

3. What can you infer about the effect of light on photosynthesis from the data gathered?

Cell Respiration- Application

Students in biology class had a one hour session to test a model of yeast growth. Their materials were sugar, room temperature water, and dry yeast (a single-celled fungus). The investigation was carried out and the results are shown below. Substance D resulted from a metabolic process that produces ATP in yeast.

1. Which statement best describes substance D?
   - A. It is oxygen released by protein synthesis.
   - B. It is glucose that was produced in photosynthesis.
   - C. It is starch that was produced during digestion.
   - D. It is carbon dioxide released by respiration

2. What is the primary goal of cell respiration in plants and animals?

3. The same investigation was carried out the next day. This time, far less gas was collected in the top of the tube. Based on the information in the set up above, what variable may have been changed in the experiment?

Interdependence of Photosynthesis and Cell Respiration

1. Use the diagram to the right to identify substance X and Y
   - X ____________
   - Y ____________

2. Photosynthesis and cellular respiration are extremely important cell processes. How are the two processes dependent on one another? Do Not write “They are just opposite chemical reactions.”