30.1: Respiratory and Circulatory Functions

Key Concept: The Respiratory and circulatory system bring oxygen and nutrients to the cells.

Vocabulary: Write a definition in your notebook for each of the following terms:

- circulatory system
- lung
- vein
- respiratory system
- artery
- heart
- trachea

Main Idea: The respiratory and circulatory systems work together to maintain homeostasis

Fill in the Q and A chart below about the circulatory and respiratory systems:

<table>
<thead>
<tr>
<th>Questions</th>
<th>Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What are the main functions of the circulatory system?</td>
<td></td>
</tr>
<tr>
<td>2. What are the main functions of the respiratory system?</td>
<td></td>
</tr>
</tbody>
</table>

Main Idea: The respiratory system moves gases into and out of the blood.

1. What pathway does air flow after it enters the nose and mouth?
   ______________________________________________________________
   ______________________________________________________________
   ______________________________________________________________
   _______

2. Explain why so much surface area is needed in the lungs?
   ______________________________________________________________
   ______________________________________________________________
   ______________________________________________________________

3. As shown in Figure 30.2, when you inhale, the muscles of the rib cage contract, expanding the rib cage. The diaphragm flattens and moves downward, and air flows into the lungs. What happens when you exhale?
   ______________________________________________________________
   ______________________________________________________________
   ______________________________________________________________
   ______________________________________________________________
   ______________________________________________________________
   ______________________________________________________________
   ______________________________________________________________
   ______________________________________________________________
   ______________________________________________________________
Main Idea: The circulatory system moves blood to all parts of the body.

4. Fill in the chart to help you remember the parts of the circulatory system and their functions:

<table>
<thead>
<tr>
<th>Part</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart</td>
<td></td>
</tr>
<tr>
<td>Arteries</td>
<td></td>
</tr>
<tr>
<td>Veins</td>
<td></td>
</tr>
<tr>
<td>Capillaries</td>
<td></td>
</tr>
</tbody>
</table>

5. How do the heart and blood vessels maintain a stable body temperature in hot and cold weather?
   ____________________________________________________________________________________
   ____________________________________________________________________________________
   ____________________________________________________________________________________

30.2: Respiration and Gas Exchange

Key Concept: The respiratory system exchanges oxygen and carbon dioxide.

Vocabulary: red blood cell

Main Idea: The respiratory and circulatory systems work together to maintain homeostasis

1. What are the three principles of gas exchange?
   ____________________________________________________________________________________
   ____________________________________________________________________________________

2. What is the advantage of having so many clusters of alveoli in the lungs?
   ____________________________________________________________________________________
   ____________________________________________________________________________________
   ____________________________________________________________________________________
   ____________________________________________________________________________________

In your notebook, create a diagram that shows the exchange of gases between the alveoli and capillaries. Use a blue arrow to show the movement of CO₂ and a red arrow to show the movement of O₂.

3. What is the function of hemoglobin in red blood cells?
   ____________________________________________________________________________________

4. When CO₂ levels in the blood increase, how does the nervous system respond?
   ____________________________________________________________________________________