Breathing Worksheet
This worksheet accompanies Breathing.ppt

1. The diagram below shows the structure of the respiratory system.

   a. Label the diagram.

   ![Diagram of the respiratory system]

   b. Give the name of the structure where gas exchange takes place.

   c. Intercostal muscles contract and relax during breathing. Give the name of the other major muscle that causes breathing.

   d. Which structure has the largest diameter: bronchioles, trachea, bronchi or alveoli?
2. Complete the following sentences about breathing and gas exchange.

The process which releases energy from food is called ………………………, whereas the process that allows air to enter and leave the body is called ……………………….

Bringing air into the lungs is called ………………………, whereas expelling air out of the lungs is called …………………. Once in the lungs, ……………………… from the air diffuses into the blood and ………………… diffuses from the blood to the air. Carbon dioxide is a waste product made during respiration and high levels of it are ………………………. The ……………………… is able to detect when levels of carbon dioxide in the blood are getting high, and it increases the rate of breathing to try and remove it.

3. Complete the table about ventilation.

<table>
<thead>
<tr>
<th>What is another name for this process?</th>
<th>Breathing in</th>
<th>Breathing out</th>
</tr>
</thead>
<tbody>
<tr>
<td>How does the ribcage move?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do the external intercostal muscles contract or relax?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the diaphragm contract or relax?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the diaphragm move up or down?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the volume in the thorax increase or decrease?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the pressure in the thorax increase or decrease?</td>
<td></td>
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</tbody>
</table>
4. A spirometer can be used to measure lung capacities.

a. Match each word to its correct definition by drawing a line between them.

- **tidal volume**  the air left in the lungs after a maximum exhalation
- **vital capacity**  the volume of air breathed during normal, relaxed breathing
- **residual volume**  the maximum volume of air that can be breathed out after a maximal inhalation

b. Students used a spirometer to measure these volumes for their own lungs. A spirometer trace for one of the students is shown below.

Complete the table with the results from the trace (the values can be estimated to hundreds of millimetres).
5. There are many different diseases affecting the respiratory system. Give the name of each disease from the descriptions below.

- A chronic condition where breathing becomes difficult at certain times and the person might wheeze. It is caused by contraction of the airways and an increase in mucus production.

- A life threatening disease caused by the grown of tumours in the lungs.

- A genetic disorder leading to an excess of mucus being produced in the body, especially in the respiratory system.

- An industrial disease caused by the inhalation of particles of a substance that was once used in building materials.

6. Some people think that severely injured patients should not be placed on artificial ventilators indefinitely. Give some of the arguments for and against this.