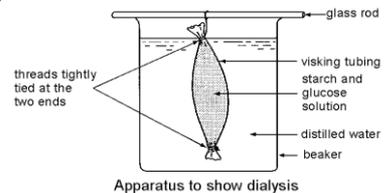
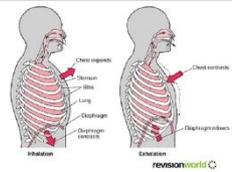
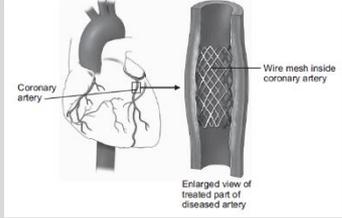
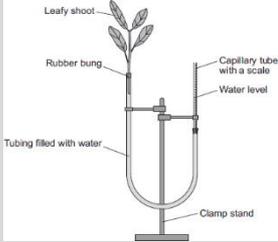
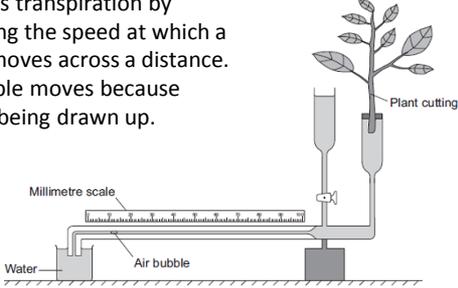


B3 Movement of substances in and out of cells.

<p>Define Osmosis</p>	<p>Osmosis is the diffusion of water from a dilute to a more concentrated solution through a partially permeable membrane that allows the passage of water molecules</p>	<p>The respiratory system</p>	<p>The lungs are in the upper part of the body (thorax), protected by the ribcage and separated from the lower part of the body (abdomen) by the diaphragm</p>
<p>What is visking tubing and how is it used to demonstrate Osmosis.</p>	<p>A partially permeable membrane used to test the process of osmosis.</p> 	<p>How we breathe</p> 	<p>To make air move into the lungs the ribcage moves out and up and the diaphragm becomes flatter by CONTRACTING. This increases the VOLUME of the thorax. Which LOWERS PRESSURE. Which suck air into the lungs. These changes are reversed to make air move out of the lungs. The movement of air into and out of the lungs is known as ventilation.</p>
<p>Explain what happens to a plant cell when it is placed in a concentrated solution?</p>	<p>Cells change shape when they are placed into solutions. When concentrated water leaves the cell by osmosis because of the concentration gradient and the cell membrane pulls away from the cell.</p>	<p>How leaves are designed to maximise photosynthesis</p>	<p>The top layer of cells are closely packed together to trap the maximum amount of light.</p> <p>Cells in the middle layer have air spaces to allow diffusion oxygen and carbon dioxide.</p> <p>The surface area of leaves is increased by the flattened shape and internal air spaces.</p>
<p>Components of sports drinks and why they are useful.</p>	<p>Water – rehydrates the cells Ions - keeps the water balanced Sugar – replaces sugar used in respiration</p>		
<p>The differences between diffusion and active transport.</p>	<p>Active transport needs energy diffusion doesn't. Active transport goes against the concentration gradient.</p>	<p>Roots – Absorbing water</p> 	<p>The surface area of the roots is increased by root hairs</p>
<p>Roots - absorbing nutrients and how they are adapted.</p> 	<p>They absorb nutrients by ACTIVE TRANSPORT. They are adapted to do this by having Lots of Mitochondria for energy. DO NOT say large surface area as this is only relevant when discussing diffusion and osmosis.</p>	<p>Transpiration</p>	<p>water <u>loss</u></p> <p>as a vapour / by evaporation</p>
<p>Alveoli adaptations</p>	<ul style="list-style-type: none"> Increases SA. A dense network of capillaries maintains concentration gradient. One cell thick for short diffusion pathway. 	<p>Factors affecting transpiration</p>	<ul style="list-style-type: none"> more rapid in hot, dry and windy conditions. If plants lose water faster than it is replaced by the roots, the stomata can close to prevent wilting.

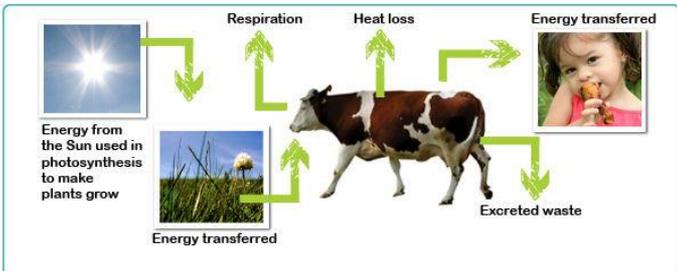
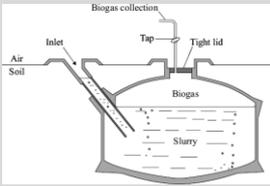
B3 Transport systems

<p>Describe the pathway of blood through the heart.</p>	<p>Blood enters the RIGHT atrium of the heart via the VENA CAVA. The atrium contracts and force blood into the RIGHT ventricle. The ventricles contract and force blood out of the PULMONARY ARTERY. Valves in the heart ensure that blood flows in the correct direction. Blood flows from the heart to the lungs returns via the PULMONARY VEIN Blood enters the LEFT atria of the heart The atrium contracts and force blood into the LEFT ventricle. The ventricles contract and force blood out of the AORTA</p>	<p>Treating heart conditions.</p>  <p>Coronary artery Wire mesh inside coronary artery Enlarged view of treated part of diseased artery</p>	<p>Stents keeps blood vessel open so allows more blood to heart which allows more oxygen to cardiac muscle.</p> <p>Artificial hearts - extends lifespan but low success rate, limited life span, operation is dangerous.</p>
<p>Blood</p>	<p>Contains fluid called plasma. Red blood cells.- No nucleus – Deliver Oxygen White blood cells. – Have a nucleus – Fight pathogens Platelets. - No nucleus – Clotting</p>	<p>What is a xylem?</p>	<p>xylem tissue transports water and mineral ions from the roots to the stem and leaves</p>
<p>How are red blood cells adapted to their function?</p>	<p>Red blood cells - have no nucleus. They are packed with haemoglobin. In the lungs haemoglobin combines with oxygen to form oxyhaemoglobin. In other organs oxyhaemoglobin splits up into haemoglobin and oxygen.</p>	<p>What is a phloem?</p>	<p>phloem tissue carries dissolved sugars from the leaves to the rest of the plant, including the growing regions and the storage organs.</p>
<p>Describe the differences in the 3 types of blood vessels.</p>	<p>Arteries have thick walls containing muscle and elastic fibres.</p> <p>Veins have thinner walls and often have valves to prevent back-flow of blood due to LOW PRESSURE.</p> <p>Capillaries are one cell thick and allow diffusing of substances across them.</p>	<p>What is a potometer?</p>  <p>Leafy shoot. Rubber bung Capillary tube with a scale Water level Tubing filled with water Clamp stand</p>	<p>Measures transpiration by calculating the speed at which a bubble moves across a distance. The bubble moves because water is being drawn up.</p>  <p>Plant cutting Millimetre scale Air bubble Water</p>
<p>How can fatty food lead to heart disease?</p>	<p>Fatty foods contain cholesterol Cholesterol forms plaque in coronary arteries and so causes heart disease.</p>		

B3 Homeostasis

Homeostasis	Homeostasis is how the body keeps conditions inside it the same. Scientists describe it as the maintenance of a constant internal environment .	Waster products	carbon dioxide, produced by respiration and removed via the lungs when we breathe out urea, produced in the liver by the breakdown of amino acids removed by the kidneys in the urine,
Sugar control - insulin	The blood glucose concentration of the body is monitored and controlled by the pancreas. The pancreas produces the hormone insulin, which allows the glucose to move from the blood into the cells.		Kidney function
Sugar control -Glucagon	A second hormone, glucagon, is produced in the pancreas when blood glucose levels fall. This causes glycogen to be converted into glucose and be released into the blood.	Waste products How does dialysis work?	
Control of body temperature	<p>If body temperature too high blood vessels supplying skin (capillaries) dilate / widen; Sweat produced which evaporates leaving particles with less energy behind cooling the skin</p> <p>if body temperature is too low blood vessels supplying skin (capillaries) constrict / narrow; so more / less blood flows through skin (capillaries) or nearer the surface of the skin; so more / less heat is lost (from the skin by radiation) Shivering – Increases respiration an exothermic reaction which releases heat.</p>		Kidney transplant
Sensing temperature change	<p>Thermoregulatory centre monitors blood temperature</p> <p>Temperature receptors in the skin send impulses to the thermoregulatory centre, giving information about skin temperature.</p>		

B3 Humans and their environment

<p>Waste can pollute in many ways.</p>	<ul style="list-style-type: none"> ■ water, with sewage, fertiliser or toxic chemicals ■ air, with smoke and gases such as sulfur dioxide, which contributes to acid rain ■ land, with toxic chemicals such as pesticides and herbicides, which may be washed from the land into waterways. 	<p>Impact of climate change</p>	<ul style="list-style-type: none"> ■ may cause big changes in the Earth's climate ■ may cause a rise in sea level ■ may reduce biodiversity ■ may cause changes in migration patterns, eg in birds ■ may result in changes in the distribution of species.
<p>Deforestation</p>	<ul style="list-style-type: none"> ■ increased the release of carbon dioxide into the atmosphere (because of burning and the activities of microorganisms) ■ reduced the rate at which carbon dioxide is removed from the atmosphere and 'locked up' for many years as wood. ■ Deforestation leads to reduction in biodiversity 	<p>Food production</p>	
<p>Why we cause deforestation</p>	<ul style="list-style-type: none"> - Space for cattle and rice for food but this also increases methane. - Space to grow biofuels based on ETHANOL (C1). - Timber 	<p>Increasing biomass</p>	<ul style="list-style-type: none"> • Reduce movement • Keep warm 
<p>Peat bogs</p>	<p>A peat bog is carbon rich organic material. The destruction of peat bogs and other areas of peat releases carbon dioxide into the atmosphere.</p>		
<p>Bio gas generator</p> 	<ul style="list-style-type: none"> ■ Methane is the main gas. ■ Produced in an anaerobic fermenter ■ Uses many types of plants/carbohydrates ■ To work it must be a warm condition. ■ These are built underground to less visual impact, insulated, withstand pressure build-up. 	<p>Fish stocks</p>	<p>Increase net hole size so young fish can escape to allow them to go on and breed. Introduce quotas</p>
		<p>Mycoprotein</p>	<p>The fungus <i>Fusarium</i> produces mycoprotein, a protein-rich food suitable for vegetarians. The fungus is grown on glucose syrup, in aerobic conditions, and the biomass is harvested and purified.</p>