

Name 4 features found in plants and animal cells	Nucleus, Cell membrane, cytoplasm, mitochondria
Name 3 features found in plant cells and not in animal cells	Chloroplasts large vacuole , cell wall
Why do muscle cells have a lot of mitochondria?	To respire and make energy for muscle contraction
What is the function of a cell wall in plants?	Cell wall supports the cell
What is the function of a nucleus?	Contains DNA which controls the cell's activities
What is the function of the cell membrane	Controls what enters and leaves the cell.
What is the function of a vacuole?	Filled with solution of glucose, amino acids and salts.
What is a tissue?	A group of similar cells with a similar function
What is an organ?	A collection of 2 or more tissues that perform a function.
What is diffusion?	Passive movement of substances down a concentration gradient.
Why is a cell membrane a selectively permeable membrane?	It only allows some chemicals through it.e.g. oxygen and glucose
What is osmosis?	Diffusion of water through a selectively permeable membrane
What is active transport?	The movement of substances against a cocntration gradient. It requires energy/ATP
Why is diffusion described as a passive process?	No energy involved.
What will happen to a red blood cell in pure water?	It will burst as water enters across the cell membrane and there is no cell wall to prevent it bursting

What are enzymes made of?	Proteins
What do enzymes do?	They speed up chemical reactions
What is the active site?	It is the specific site that the substrate binds to.
What effect does temperature have on enzyme action?	Increases rate of enzyme activity up to an optimum level then enzyme begins to denature
What effect does pH have on enzyme activity.?	Enzyme activity varies with pH. Each enzyme has an optimum pH
Define catalyst	It is a chemical which speeds up a reaction between 2 other chemicals without being used up itself.
Explain the lock and key model.	The substrate fits into the enzyme like a key fits into a lock. The substrate then is released by the enzyme as 2 or more products
What is the word equation for aerobic respiration?	Glucose + Oxygen → Carbon dioxide + water.+ energy.
What processes require energy from respiration?	Movement, digestion, growth and cell division.
What is respiration without oxygen called?	Anaerobic respiration.
What is the name of the chemical which stores the energy released from respiration?	ATP
What is the word equation for anaerobic respiration?	Glucose >> Lactic acid
Why does anaerobic respiration produce less energy than aerobic?	Not all the glucose is broken down so less ATP is made.
What chemical is lactic acid broken down into?	Carbon dioxide and water.
What is oxygen debt?	Oxygen which has to be paid back to break down lactic acid and release it's energy

Name the 3 types of tube in the respiratory system	Trachea; bronchus; bronchioles.
What is mucus?	A sticky substance that traps dust and microbes from the air as it passes through the trachea and bronchi.
What are cilia?	Small hairs on cells lining the breathing tubes.
What is the sequence of events which causes Inhalation?	Diaphragm contracts down
Inhaled and exhaled air contains most of which gas and why?	Nitrogen because the body does not absorb it.
What is the sticky substance that clogs up the small air passages?	Tar
Which chemical is very addictive?	Nicotine.
Which chemical is a poisonous gas and makes it more difficult for red blood cells to carry oxygen?	Carbon Monoxide
Name 2 diseases which can be caused by smoking.	Lung cancer, Emphysema,
What structures are paralysed by cigarette smoke?	The cilia. This means harmful stuff like tar, dust and microbes can enter the smaller bronchioles and alveoli.
What is the percentage of oxygen in inhaled and exhaled air?	inhaled 21%      exhaled 16%
What is the percentage of carbon dioxide in inhaled and exhaled air?	inhaled 0.04%      exhaled 4%
What is the percentage of Nitrogen in inhaled and exhaled air?	inhaled 78%      exhaled 78%
What chemical can be used to detect Carbon dioxide?	Limewater , it will turn milky in the presence of carbon dioxide.
What chemical absorbs carbon dioxide?	Sodium hydroxide.

Name the enzyme that breaks down carbohydrates and the products formed	Carbohydrase, it breaks down starch into glucose
Name the enzyme that breaks down proteins and the products formed	Protease, it breaks down proteins into amino acids
Name the enzyme that breaks down fats(lipids) and the products formed	Lipase, it breaks fats into fatty acids and glycerol
Where is protein digested?	Stomach and small intestine
Where are carbohydrates digested?	Mouth and small intestine
Where are lipids digested?	Small intestine.
Where is water reabsorbed in the gut?	Large intestine.
How do villi help absorption?	They greatly increase the surface area over which molecules can be absorbed.
How is food moved through the gut?	Waves of muscle contraction called peristalsis.
What does bile do, where is it made and stored	It helps the lipase enzyme by emulsifying the fats i.e. splitting them into small droplets.
What is a balanced diet?	A diet which contains carbohydrates, proteins and fats; minerals , vitamins, fibre and water in appropriate amounts.
What diseases can be brought about by being overweight?	Heart disease , stroke , cancer, type 2 diabetes
What problems does a high salt diet cause?	High blood pressure, heart disease and stroke.
What is the test for glucose?	Benedict's solution blue to orange red precipitate.
What is the test for protein?	Biuret test . Blue to purple.

What is the test for starch?	Iodine brown to blue/black
What is digestion?	The breaking down of large insoluble molecules into small soluble molecules that can enter
Name the 4 parts of the blood.	Plasma, red blood cells, white blood cells and platelets
What is the function of platelets?	Cell fragments which help the blood to clot.
State two ways red blood cells are adapted to their function.	They have no nucleus and are shaped like a biconcave disc to increase surface area.
Starting from the vena cava, describe the flow of blood to the lungs and back to the heart.	Vena cava, right atrium, right ventricle, pulmonary artery, lungs, pulmonary vein, left atrium, left ventricle, aorta.
What is a double circulation?	The pulmonary circulation around the lungs and the systemic circulation around the body.
What is the function of the semi lunar valves in the heart?	To stop backward flow of blood from arteries to ventricles.
Why does blood pressure get much higher in the left ventricle than the right.?	LV walls are thicker with more muscle so create higher pressure to push blood out of aorta and around the body.
Why do arteries have a much thicker wall than veins?	To withstand the higher blood pressure they must carry.
Which blood vessels supply the heart?	The coronary arteries and veins.
Where would you find oxygenated blood?	Arteries except the pulmonary artery.
Where would you find deoxygenated blood?	Veins except the pulmonary vein.
Why does blood in the capillaries travel very slowly	So that materials can be exchanged with the cells they surround.
How does venous blood go in the right direction?	Valves are needed to stop backward flow.

What is the function of red blood cells?	To carry oxygen by combining it with haemoglobin
What is the function of a white blood cell?	Immunity
Name the 4 factors needed for photosynthesis.	Light, CO <sub>2</sub> , water and chlorophyll.
How do you test for starch in a leaf?	Iodine goes blue/black.
How do you remove chlorophyll from a leaf?	Boil in alcohol.
How do you de starch a plant?	Place in the dark for 24hours.
How are minerals taken into a root?	By active transport.
How is glucose used after it has been made by photosynthesis?	It is converted to starch for storage or used to make cellulose, proteins and oils.
Why is it useful for a plant to have air spaces in the spongy mesophyll layer of the leaf?	To allow CO <sub>2</sub> to reach the palisade cells.
What is a limiting factor	Something which is limiting the rate of photosynthesis at a given time.
What are the limiting factors of photosynthesis?	Temperature; levels of CO <sub>2</sub> ; light intensity
Give the equation for photosynthesis	Carbon dioxide + water > Glucose + oxygen
What cell organelle is required for photosynthesis?	a chloroplast
What is the source of energy in a food chain?	The sun
What is another name for the first stage consumer?	Primary consumer

What is biomass?	The total weight of organisms in a given area .
Why is a pyramid of biomass more accurate than a pyramid of numbers?	Because producers can be small in number but large in mass so using numbers only will distort a pyramid
What processes releases carbon into the atmosphere?	Respiration and combustion
What process takes Carbon dioxide out of the air?	Photosynthesis.
What process transfers carbon from plants to animals?	Eating
What process unbalances the C cycle?	Combustion
Name 5 types of pollutant	Chemical, sewage, noise, heat , rubbish
What is bioaccumulation?	Toxins building up in an organism, usually one at the top of a food chain.
What is an indicator species?	It is a species whose presence or absence is a sign of pollution.
Which organisms are indicators of air pollution?	Lichens
Which organisms are indicators of water pollution?	aquatic invertebrates.
Which organisms are responsible for the lowered level of dissolved oxygen seen in eutrophication?	Bacteria.
What is intensive farming?	An agricultural system that aims to produce maximum yield from the land