Cells

1	What are the differences between eukaryote and prokaryote cells?	Prokaryotes do not contain a nucleus, whereas eukaryotes do. Prokaryotes have cell walls, whereas eukaryotes do not.
2	Name the 5 common features of a plant and animal cell	Cell membrane, Cytoplasm, nucleus, mitochondria, ribosomes
3	State the 3 organelles that a plant cell contains and an animal cell does not	Chloroplasts, vacuole, cell wall
4	What is the function of the nucleus?	Contains DNA
5	What is the function of the cell membrane?	To controls the movement of substances in and out of the cell
6	What is the function of the cytoplasm?	Contains all the organelles and is where most chemical reactions takes place
7	What is the function of the mitochondria ?	Site of respiration where energy is released
8	What is the function of the ribosomes?	The site of protein synthesis, where new proteins are made

Organisation 1

1	What is the function of the permanent vacuole?	Contains water and cell sap
2	What is the function of the chloroplasts?	Site of photosynthesis (contains chlorophyll)
3	What is the definition of organ?	A collection of different tissues working together to carry out a specific function.
4	What is the definition of an organ system?	A group of organs that work together to carry out a specific function and form organisms.
5	What is the definition of tissue?	A group of specialised cells with a similar structure and function.
6	What type of animal tissue contracts, bringing about movement?	Muscular tissue.
7	Name the four major plant organs.	Roots / Leaves / Stem / Flower
8	What are the names of the two transport tissues in plants?	Xylem and Phloem.
9	What is cardiovascular disease?	Any disease that involves the heart or blood vessels.
10	What are the three main types of blood vessels?	Arteries, veins and capillaries.

Organisation 2

1	What food group is tested using ethanol?	Lipids.
2	Name the parts of the digestive system?	Mouth, oesophagus, stomach, liver, gall bladder, pancreas, small intestine, large intestine, anus.
3	What do proteins do?	Proteins are used for growth and repair.
4	What food group is tested using Benedict's?	Simple sugars.
5	What colour do simple sugars turn Benedict's solution?	Simple sugars turn Benedict's from Blue to Brick Red.
6	What food group is tested using iodine?	Starch.
7	Where is lipase produced?	Stomach and pancreas.
8	What are the two factors that enzyme activity is affected by?	Temperature and pH.
9	Which organ system absorbs nutrients from food?	The digestive system.
10	Which organ absorbs water from undigested food?	The large intestine.

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Atomic structure

1	What is an atom?	The smallest part of an element
2	What is meant by an element?	A substance made of only one type of atom
3	What is meant by a compound?	A substance made of two or more different atoms chemically bonded together
4	What is meant by a molecule?	A substance made of more than one atom chemically bonded together (can be atoms of the same type!)
5	What is meant by a mixture?	A substance made of more than one thing not chemically bonded together
6	Describe the plum pudding model of the atom.	A ball of positive charge with negative electrons scattered randomly within it
7	State the findings of the gold foil experiment.	That atoms have dense nucleuses with a positive charge
8	State the names of the three subatomic particles.	Protons, neutrons, electrons
9	State the masses of the subatomic particles.	Protons: 1, neutrons: 1, electrons: 0
10	State the relative charges of the subatomic particles	Protons: +1, neutrons: 0, electrons: -1

Structure and bonding

1	What type of ion do group 2 elements form?	2+ ions
2	What is a monomer?	a molecule that can be bonded to other identical molecules to form a polymer.
3	Describe the structure of graphene.	A single layer of graphite, formed of carbon atoms each bonded to three other carbon atoms (hexagonal structure)
4	Describe the structure of a polymer	A polymer is composed of many simple molecules that are repeating structural units called monomers.
5	What is an ionic bond?	Bonding between a metal and a non metal involves transfer of electrons
6	What is covalent bonding?	Bonding between a non metal and a non metal involves sharing of electrons
7	Which element is both diamond and graphite made from?	Carbon
8	Describe the structure of diamond	Giant covalent lattice
9	Describe the structure of carbon dioxide.	Simple covalent molecule
10	Describe the structure of copper.	Giant metallic lattice surrounded by delocalised electrons.
11	Why is the ball and stick model not an accurate representation of the structure of an ionic compound**?**	Does not accurately depict the millions of ions in the lattice. The ions should touch each other/ there are no gaps between the ions
12	What are the properties of graphite?	High melting point, soft, slippery, insoluble, conducts electricity

Energy changes

1	Write down the definition of an exothermic reaction.	A reaction in which energy is transferred to the surroundings.
2	Write down the definition of activation energy.	The minimum amount of energy that particles must have to react.
3	Write down the definition of an endothermic reaction.	A reaction which absorbs energy from its surroundings,
4	If the energy required to break bonds is greater than the energy released by making bonds, is the reaction endothermic or exothermic?	Endothermic
5	If the temperature of products is lower than the temperature of the reactants, is the reaction endothermic or exothermic?	Endothermic
6	If the energy required to break bonds is less than the energy released by making bonds, is the reaction endothermic or exothermic?	Exothermic
7.	How would you measure whether an endothermic reaction had occurred?	Use a thermometer. Reaction is endothermic if temperature goes down.
	How would you measure whether an exothermic reaction had occurred?	Use a thermometer. Reaction is exothermic if temperature goes up.

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Energy

1	Name five energy stores	Kinetic, Thermal, Gravitational Potential, Chemical Potential, Elastic Potential, Electric Potential, Nuclear Potential, Magnetic Potential
2	What are the four energy transfer pathways?	Mechanical, Heating, Electrical, Radiation
3	What is the law of Conservation of Energy?	Energy cannot be created or destroyed, but only transferred from one store to another or dissipated to the surroundings.
4	Which energy transfer pathway does Work represent?	Work represents the mechanical energy pathway.
5	What is the word equation for Work?	Work = Force x Distance
6	What is the symbol equation for Work?	W = F x d
7	What is the unit for Work?	Joule (J)
8	What is the unit for Force?	Newtons (N)
9	What is the unit for distance?	metres (m)
10	What store of energy is associated with moving objects?	Kinetic energy

Electricity

1	What is the definition of current?	The rate of flow of electrical charge, i.e. how much charge flows every second.
2	What is the relationship between charge current and time?	Q = I x t
3	What is the SI unit for Charge	Coulombs
4	What is the SI unit for current	Ampere
5	What is the SI unit for time	seconds
6	What can be said about the value of current at any point in a series circuit?	Current is the same at all points in a closed loop.
7	What is the equation linking potential difference, charge and energy (or work done)?	V = E / Q or V = E// Q
8	What is the SI unit for potential difference?	Volts
9	What is the SI unit for resistance?	Ohms
10	What equation should be used to calculate potential difference if current and resistance are known?	V = I x R

Radioactivity

1	What is the name of the process in which an unstable nucleus gives out radiation to become more stable?	Radioactive decay
2	Define the activity of an unstable nucleus.	Activity is the rate of decay of a source of unstable nuclei.
3	What is the unit of radioactive activity?	Becquerel (Bq)
4	What is count rate?	The number of radioactive decays per second for a radioactive source.
5	Give an example of a detector that may be used to measure count-rate.	Geiger-Muller tube
6	State four types of nuclear radiation.	Alpha particles, Beta particles, Gamma rays, Neutrons.
7	What are the constituents of an alpha particle?	Two protons and two neutrons. It is the same as a helium nucleus.
8	What is the range of an alpha particle through air?	A few centimetres (normally in the range of 2-10cm)
9	What will stop beta radiation from passing through a point?	A thin sheet of aluminium Several metres of air
10	What will stop gamma radiation from passing through a point?	Several centimetres of lead A few metres of concrete