8BD Digestion and Nutrition

Section 1: Nutrients

Nutrient	Function
1 Carbohydrates	Provides **energy.** Found in sugary foods and bread and pasta
2 Lipids	Provides you with a store of **energy** and keeps you warm (insulation).
3 Proteins	Are used for **growth and repair**. Found in **meat** and **dairy.**
4 Vitamins and minerals	Keeps you healthy (needed for normal function). Found in **fruit and vegetables.**
5 Water	Needed in all cells and bodily fluids.
6 Fibre	Not a nutrient but important for a healthy diet. Keeps food moving through the gut. Found in **carbohydrates**.

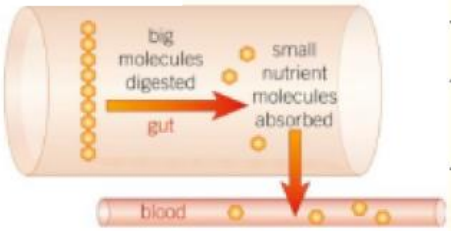
Section 4: Digestion

14 Digestion	Large insoluble molecules broken down into smaller soluble molecules
15 Mouth	Food is chewed and mixed with saliva
16 Oesophagus	The pipe connecting the mouth and stomach
17 Stomach	Muscle action churns food and mixes with digestive juices. It is also mixed with acid to kill bacteria.
18 Small intestine	Small food molecules are absorbed into the bloodstream.
19 Villi	Small structures that line the intestine, increasing **surface area** and maximising absorption.
20 Large intestine	Water is absorbed leaving undigested food called faeces.
21 Rectum	Faeces stored here.
22 Anus	Faeces is excreted (leaves the body) here
23 Enzymes	Special proteins that break down large molecules into smaller molecules for absorption. Amylase, protease, lipase.

Section 2: Unhealthy Diets

7 Starvation	Energy expended is more than amount of energy consumed.
8 Obese	Energy expended is less than amount of energy consumed
9 Deficiency	When a person does not have enough of vitamin, mineral, or food group.

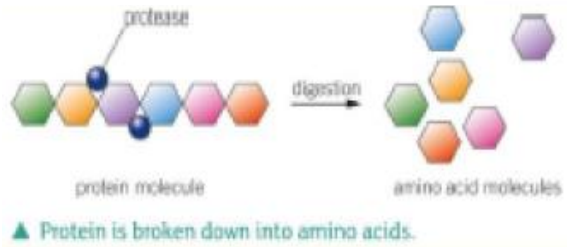
14 Digestion



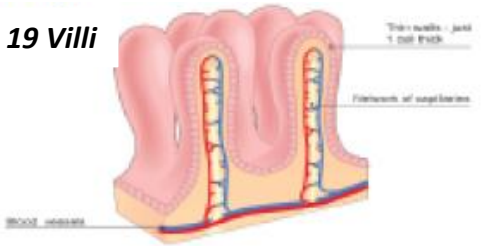
1/23 Carbohydrates. Enzyme - carbohydrase

2/23 Lipids. Enzyme - lipase

3/23 Proteins. Enzyme - protease



19 Villi



Section 3: Food Tests

Nutrient	Chemical Used	Colour change if Present
10 Starch	Iodine	Orange → blue-black
11 Lipids	Ethanol (+water)	Colourless → cloudy
12 Sugar	Benedict's solution (+ heat)	Blue → orange-brick red
13 Protein	Copper sulfate + sodium hydroxide	Blue → purple

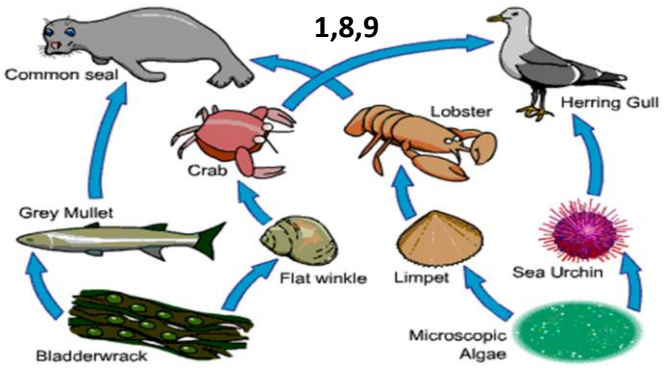
Section 5: Energy Release

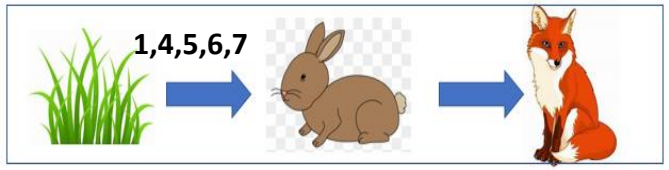
24 Glucose	Our body's preferred 'fuel'
25 Respiration	Glucose + oxygen → carbon dioxide + water
26 Joule	Unit for energy
27 Calorie	Another unit for energy (larger quantities) equal to 4.2J
28 Daily energy requirement	How much energy needed to carry out daily activities. Dependent on age, biological sex, and activity level

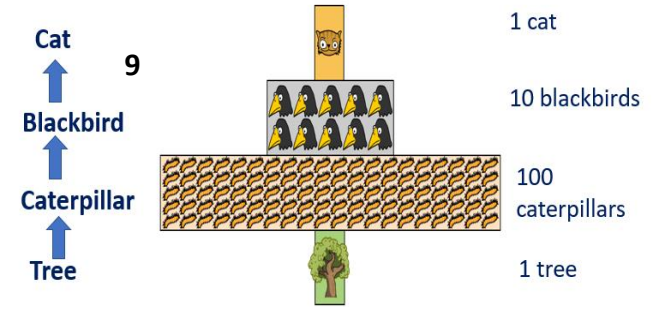
Section 6: Enzymes and Temperature

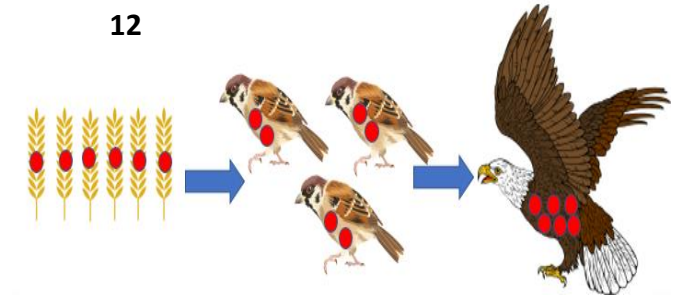
29 Active site	Binding site of the enzyme.
30 Denatured	When the enzyme irreversibly changes shape and can no longer work.

8BE Ecology









Section 1: Food Chains & Webs	
1 Food chains and webs	Tell us about feeding relationships between organisms. The arrows show the direction in which the energy moves through the chain or web
2 Producer	Food chains always start with a producer, an organism that makes its own food using energy from the sun.
3. Consumer	Food chains will contain consumers, organisms that eat/consume plants (herbivores) or animals (carnivores) or both (omnivores).
4 Trophic level	The position of an organism in a food chain.
5 Trophic level 1	The first trophic level is always the producer.
6 Trophic level 2	The second trophic level is the primary consumer always a herbivore as it eats the producer.
7 Trophic level 3	The third trophic level is the secondary consumer always an omnivore or a carnivore.
8 Food webs	Food webs show several food chains that are interlinked.
Section 2: Pyramids of Numbers	
9 Pyramids of numbers	In a pyramid of numbers, the length of each bar represents the number of organisms at each level in the food chain.
Section 3: Decay	
10 Decay	Releases nutrients from dead material. There is a finite amount of nutrients on our planet so nutrients have to be recycled.

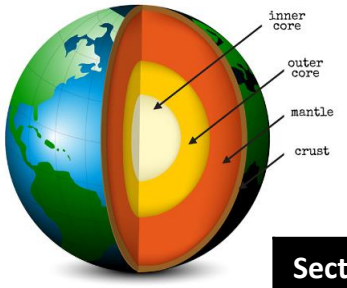
Section 4: Impact on Food Webs	
11 Factors that might affect the population of individual organisms.	Temperature (land/water), seasonal changes, rainfall, increased predation/hunting, deforestation, pH of soil/water, use of chemicals in farming, disease, pollution.
12 Bioaccumulation	Chemicals such as insecticides can enter food chains. Toxins are then passed up the food chain becoming more concentrated along the way.
Section 5: Estimating Population Size	
13 Quadrat	Counting the numbers of a species within a small section of the area being sampled.
Section 6: Classification	
14 Classification	Sorting organisms into groups based on the similarities between them.
Section 7: Adaptations	
15 Adaptations	Features that help organisms compete better and survive in their environment.
16 Competition	The struggle between two species for the same limited resource.
Section 8: Natural Selection and Evolution	
14 Natural selection	Individuals with the genetic variation that is best adapted to the environment are more likely to survive and breed.
15 Evolution	Changes in a species over a long period of time.
16 Extinction	The elimination of all members of a species.
Section 9: Biodiversity	
17 Biodiversity	The range of different plant and animal species living in an ecosystem.

8CM Materials and the Earth

Section 1: Structure and Composition of the Earth

1 Layers	Inner core (solid) – outer core (liquid) – mantle (semi liquid) – crust (solid).
2 Crust	The Earth's surface. Mostly made up from oxygen, silicon, iron and aluminium.
3 Tectonic plate	Earth's outer layer is made up of large, moving pieces called **tectonic plates.**

*1 **Layers** of the Earth*



Section 2: Rock types

4 Sedimentary rocks	Made of broken down rocks (sediment) which has been **compacted** and **cemented** together. Porous, permeable, contains fossils.
5 Metamorphic rocks	Made when other rocks are heated and pressured. Very hard and strong, have distorted fossils.
6 Igneous rocks	Made when magma (forming extrusive rock) or lava (forming intrusive rocks) cools down. Crystalline, hard, no fossils.
7 Rock cycle	The cycle that changes rocks from one type t another.

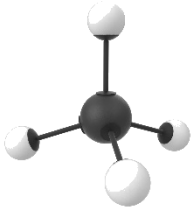
Section 3: Weathering and Erosion

8 Chemical weathering	Acid in rain reacts with rocks.
9 Biological weathering	Pants and animals break down rocks.
10 Physical weathering	Temperature changes break down rocks (e.g. freeze-thaw)
11 Erosion	Rocks hitting each other and breaking.
14 Transportation	Rocks being moved, usually by water or wind.
15 Deposition	Rocks being dropped and settling.
16 Compaction	Sediment being squashed together under the weight of sediment above
17 Cementation	Minerals 'gluing' the sediment together into one rock

Section 4: Crude oil as a fossil fuel

18 Crude oil	A mixture of **hydrocarbons**. A finite resource.
19 Hydrocarbon	A substance that contains **carbon** and **hydrogen** only
20 Alkanes	A series of saturated **hydrocarbons** including methane, ethane, propane, butane, pentane, and others.

***20 Alkane**. e.g. Methane (CH_4)*



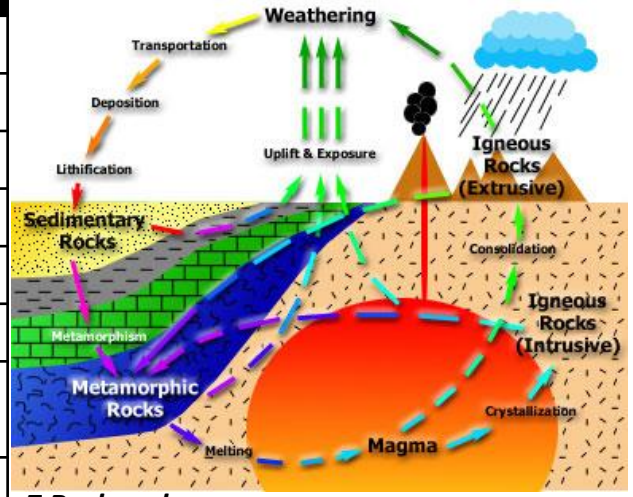
Section 5: Carbon cycle

21 Respiration	Transfers energy from food and plants. Gives **out** carbon dioxide into the atmosphere.
22 Combustion	Transfers energy from fuels. Gives **out** carbon dioxide into the atmosphere.
23 Photosynthesis	Transfers energy from carbon dioxide and water. **Removes** carbon dioxide from the atmosphere.
22 Dissolving	Takes carbon dioxide into the oceans. **Removes** it from the atmosphere.
23 Carbon sores	Places here carbon is held. Plants, animals, rocks, oceans, atmosphere.

Section 6: Climate change

24 Greenhouse effect	Gases in the atmosphere, such as CO_2, trap energy from the sun, leading to global warming.
25 Increased greenhouse gases	Combustion of fuels and deforestation leading to excess carbon dioxide in the atmosphere.

10** Freeze-thaw process of **physical weathering



7 Rock cycle

Section 7: Recycling

26 Recycling	Collecting and processing materials which have been used so the materials can be used again.
27 Advantages	Resources will last longer, uses less energy than making new resources, reduces waste and pollution.
28 Disadvantages	Effort of sorting recycling materials, the lorries emit pollution, cannot recycle everything.

8PE Electricity and Magnetism

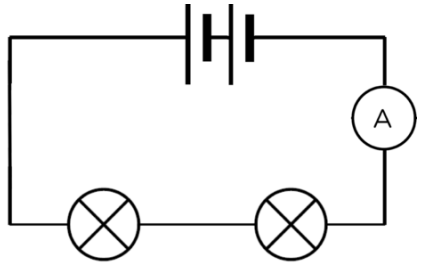
Section 1: Current

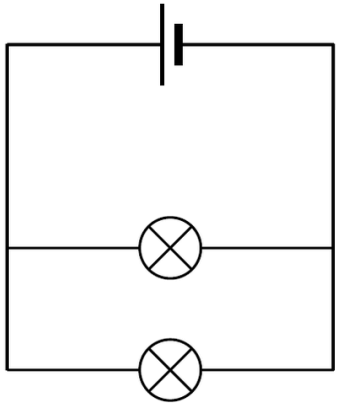
1 Current	The flow of **electrical charge** around a **circuit** per second.
2 Amps	Unit of measurement for electrical current (A).
3 Ammeter	Device used to measure an electrical current. Connected in series to the circuit.
4 Cell	Provides the push that moves charge around a circuit.

Section 2: Potential Difference

5 Potential difference	The measure of the push that a **cell/battery** can supply.
6 Volts	Unit of measurement for potential difference (V).
7 Voltmeter	Device used to measure potential difference. Connected in parallel to the component being measured.

8/3 Series circuit, with a battery, two bulbs, and an **ammeter**



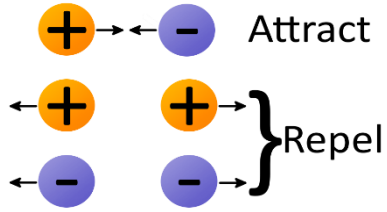


9/2 Parallel circuit with a **cell** and two bulbs

Section 3: Series and parallel

8 Series circuits	Components are all connected in a single loop. Single pathway for the current to travel.
9 Parallel circuits	Circuits are branched and offer two, or more, pathways for the current to travel

15/16/17
Like **charges** will **repel,** opposite **charges** will **attract**



Section 5: Resistance

10 Resistance	How difficult it is for the current to flow through the components.
11 Ohms	Unit of measurement for resistance (Ω)
12 Resistance can be calculated using the formula	$Resitance\ (\Omega) = \frac{potential\ difference\ (V)}{current\ (A)}$
13 Conductors	Materials that have very **low** resistance, e.g. metals
14 Insulators	Materials that have very **low** resistance, e.g. plastics, cloth

Section 6: Charging up!

15 Charges	Particles that are either **positive** or **negative**
16 Repel	Like (same) charges will push each other away.
17 Attract	Opposite charges will be drawn to each other and pull together.
18 Static electricity	A build up of electrical charge on an object, usually when friction occurs between two insulators.

Section 7: Magnets and magnetic fields

19 Magnetic field	The region where there is a **force** that acts on a **magnet.**
20 Magnetic material	A **material** that is attracted to magnets such as iron or steel.
21 Magnetic field lines	Imaginary lines that show the direction of **force** on **magnetic materials.**

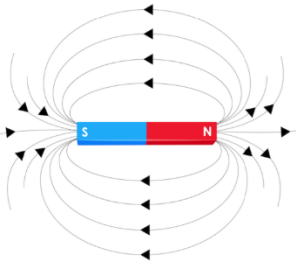
Section 8: Electromagnets

22 Electromagnet	A **temporary** magnet produced using electricity. A wire with an **electric current** flowing through it has a **magnetic field** around it.
23 Magnetise	To make a **material** into a magnet
24 Core	A rod of **magnetic material** placed inside a coil to make the **magnetic field** of an electromagnet **stronger.**

Section 9: Using electromagnets

25 Uses of electromagnets	Can be used to lift cars in a scrap yard, and in MRO scanners in hospitals.
26 Relay	Electrical device that uses electrical current flowing in one circuit to switch on and off a current in a second circuit.
27 Motor	A **component** or **machine** that **spins** when an electrical **current** runs through it.

21/19 Magnetic field lines showing the **magnetic field** around a bar magnet



Section 1: Particle Theory (Recap)

1 State of matter	The way in which the **particles are arranged** – solid, liquids or gas.
2 Change of state	When a substance changes from one state of matter to another (e.g. melting is he change from solid to a liquid). Energy changes the state, not the temperature.
3 Physical change	A change that can be **reversed** to recover the original material **e.g. a change of state.**
4 Chemical change	A change that **creates new products.** It **cannot be reversed** e.g. a chemical reaction.

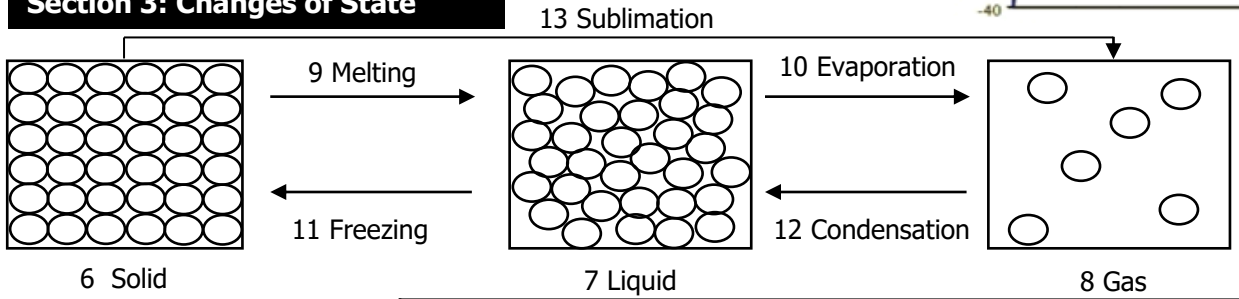
Section 2: Diffusion and Brownian motion

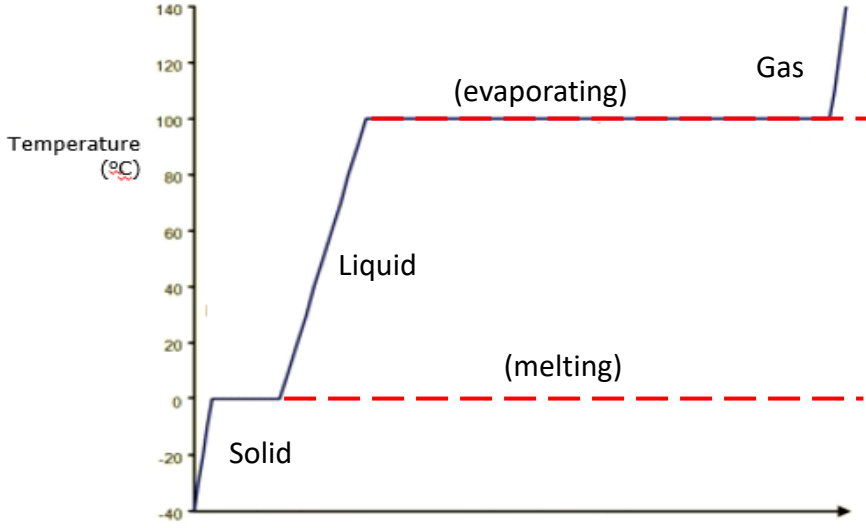
5 Diffusion	The movement of particles from an area of **high concentration** to an area of **low concentration.**
6 Brownian Motion	Particles in both liquids and gases (collectively called fluids) move randomly.

Section 4: Density

14 Density	How much **mass** a substance contains **compared to its volume**. Solids are usually dense because the particles are closely packed.	
15 Calculating Density	$Density = \frac{mass}{volume}$	Density = kilograms /metre^3 (kg/m^3) Mass = kilograms (kg) Volume = metre^3 (m^3)

Section 3: Changes of State





Heating curve of water

Section 5: Atmospheric pressure

16 Gas pressure	Gas particles are constantly moving. When they hit the walls of their container they exert a force. This force over the surface area of the container exerts a force.
17 Changing volume	Decreasing the volume increases the pressure.
18 Changing temperature	Increasing the temperature, the particles have more energy and move faster. The pressure will increase.
19 Atmospheric pressure	The pressure exerted by the air on your body at all times.

Section 6: Pressure in liquids

20 Water pressure	The pressure caused by water particles colliding with an object.
21 Increasing water pressure	The further underwater, the greater the water pressure.
22 Floating and sinking	Water pressure causes upthrust, pushing up on objects. If upthrust is greater than gravitational force, the object will float.

Section 7: Explaining a heating curve

23 Solid	Particles are closely packed, fixed and arranged in regular layers. As more energy is absorbed the kinetic energy and therefore the internal energy of the material increases.
24 Melting	Temperature doesn't change. Energy is used to weaken the forces between particles. As more energy is absorbed the potential energy and therefore the internal energy of the material increases.
25 Liquid	Particles are touching but no longer arranged regularly. They are above to move. As more energy is absorbed the kinetic energy and therefore the internal energy of the material increases.
26 Evaporation	Temperature doesn't change. Energy is used to weaken the forces between particles. As more energy is absorbed the potential energy and therefore the internal energy of the material increases.
27 Gas	Particles move randomly. As more energy is absorbed the particles move more quickly and the temperature increases.