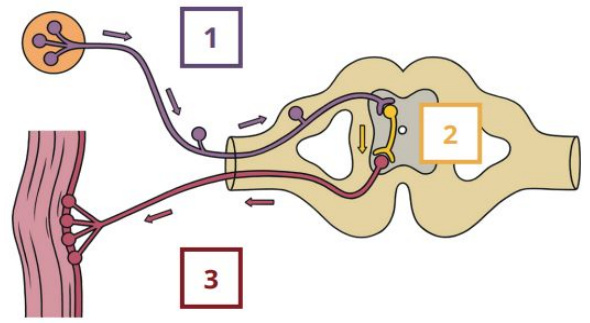


Biology

GCSE Homeostasis

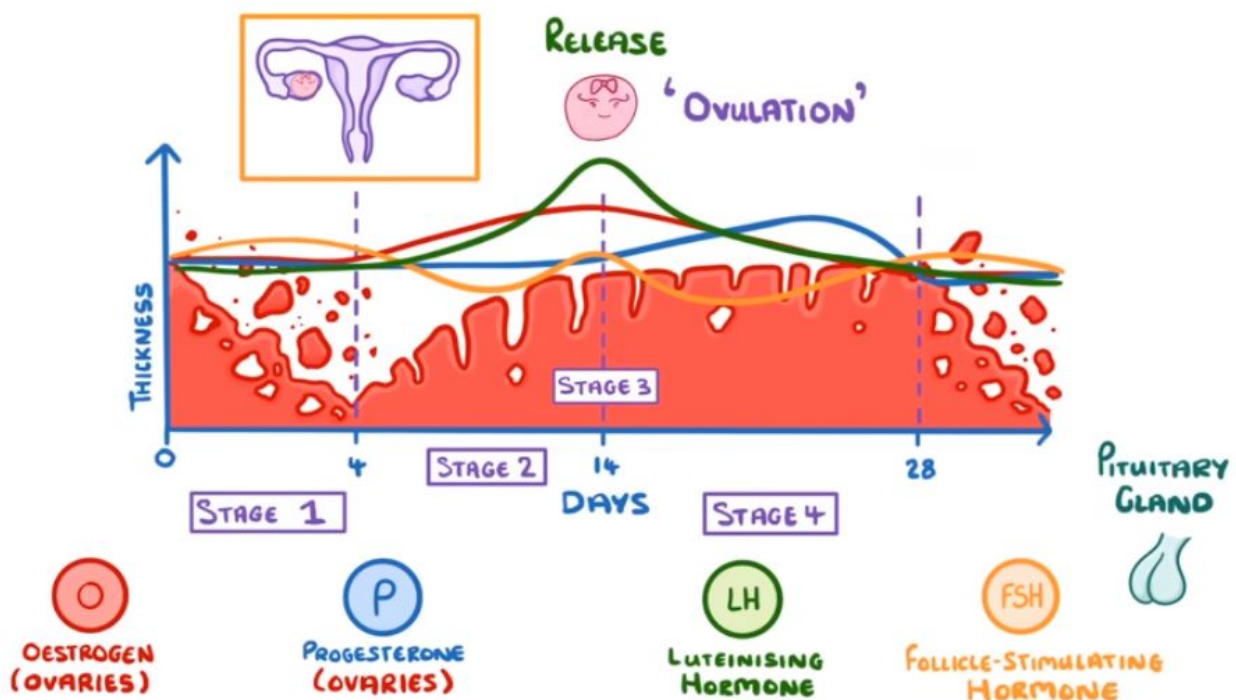
1 Reflex arc



1. Sensory neurones link the receptor to the coordination centre.
2. Relay neurones are found within the coordination centre and connect the sensory and motor neurones.
3. Motor neurones link the coordination centre to the effector.

N°	Keyword	Definition
2	Adrenal gland	The gland where the hormone adrenaline is produced.
3	Follicle stimulating hormone (FSH)	A hormone involved in the menstrual cycle that causes maturation of an egg in the ovary.
4	Glycogen	Glucose is converted into this molecule for storage in liver and muscle cells.
5	Luteinising hormone (LH)	A hormone involved in the menstrual cycle that stimulates the release of an egg
6	Oestrogen	The main female reproductive hormone. It is produced by the ovaries. It is involved in thickening and maintaining the uterus lining
7	Pituitary gland	The 'master gland' located in the brain that secretes several hormones into the blood in response to body conditions.
8	Progesterone	A female reproductive hormone that is involved in maintaining the uterus lining.
9	Synapse	A gap between two neurones. Impulses pass across it by diffusion of chemical neurotransmitters.

10



GCSE Ecology

Learned Revised Confident

_____ % Achieved: _____

Maintaining biodiversity

Breeding programmes

Protection and regeneration of rare species

Reintroduction of field margins and hedgerows.

Reduction of deforestation and carbon dioxide emissions

Recycling resources rather than dumping waste in landfill.

N°	Keyword	Definition
1	Abiotic factor	A non-living factor that can affect a community, e.g. light intensity and temperature
2	Adaptation	Special features that allow living organisms to survive and be successful in their habitat.
3	Biodiversity	The variety of all the different species of organisms on Earth, or within an ecosystem.
4	Biotic factor	A living factor that can affect a community, e.g. availability of food and new predators.
5	Community	Two or more populations of organisms occupying the same area.
6	Ecosystem	The interaction of a community of living organisms (biotic) and the non-living (abiotic) parts of their environment.
7	Interdependence	The dependence of each species on other species for food, shelter, pollination, seed dispersal etc. If one species is removed it can affect the whole community.
8	Quadrat	A square frame used to take a representative sample of plants or slow-moving animals in an area.
9	Transect	A line across a habitat or part of a habitat used to sample the number of organisms at regular intervals.

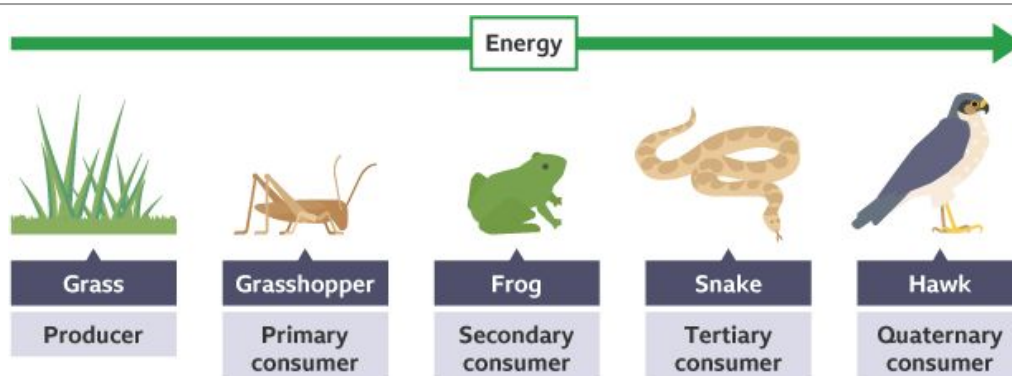
Facts

Carbon cycle - the main process involved are respiration, combustion and photosynthesis.

Water cycle - evaporation, condensation, precipitation, percolation, transpiration, respiration.

Global warming impacts living things by causing changes in the distribution of organisms, rising sea levels and habitat loss, changing weather patterns and changing migration patterns.

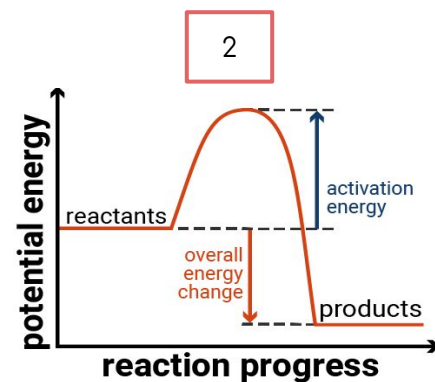
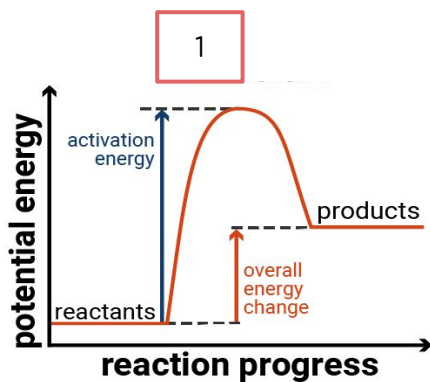
Land use for dumping waste, quarrying, farming and building - this reduces biodiversity.



Chemistry

GCSE Energy changes

Learned	Revised	Confident
_____ % Achieved: _____		



Nº	Keyword	Definition
3	Endothermic	A reaction that takes in energy from the surroundings
4	Exothermic	A reactions that releases energy to the surroundings
5	Activation energy	Minimum amount of energy required to start a reaction
6	Overall energy change	The difference between the energy of the reactants and the products
7	Catalyst	Provides an alternate reaction pathway with a lower activation energy to speed up the reaction

Nº	Facts
8	Bond breaking is an endothermic process, it requires energy
9	Bond making is an exothermic process, it releases energy
10	An endothermic reaction has a positive overall energy change - more energy was taken in than was released
11	An exothermic reaction has a negative overall energy change - less energy was taken in than was released

Nº	Overall energy change calculations (HIGHER)
12	Complete these questions using a simple T-table with "Break" and "Make" as headings. Tick off the bonds as you count them. Total break - Total make = Overall energy change

OVERALL REACTION

$$\text{H}_2 + \text{Cl}_2 \rightarrow 2\text{HCl}$$

ENDOOTHERMIC

H-H Cl-Cl

BREAK BREAK

TOTAL

H-Cl

H-Cl

FORM

TOTAL

EXOTHERMIC

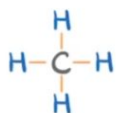
MOLECULE	ENERGY (kJ/mol)
H-H	436
Cl-Cl	242
H-Cl	431

ENERGY REQUIRED TO BREAK BONDS **ENERGY RELEASED BY FORMING BONDS**

678 - 862

= -184 kJ/mol

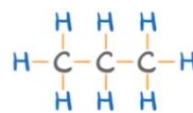
GCSE Organic chemistry



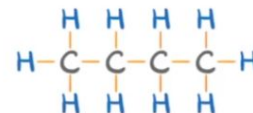
METHANE
 CH_4



ETHANE
 C_2H_6



PROPANE
 C_3H_8



BUTANE
 C_4H_{10}

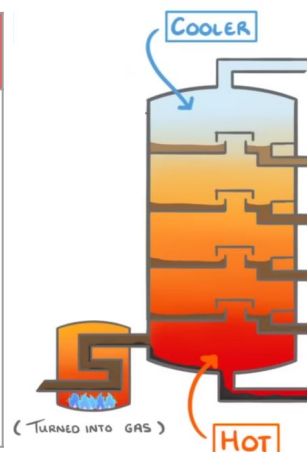
Learned Revised Confident

_____ % Achieved: _____

'HOMOLOGOUS SERIES'
↳ SIMILAR PROPERTIES (REACT IN A SIMILAR WAY)

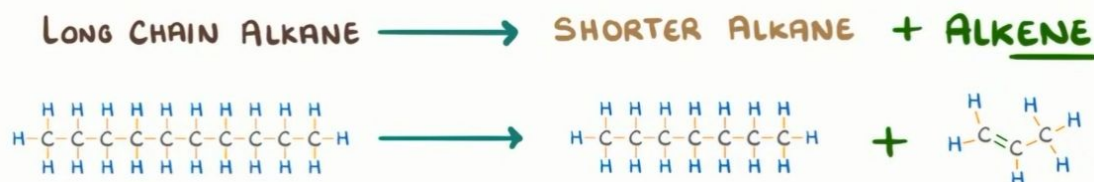
N°	Keyword	Definition
1	Hydrocarbon	A compound that contains only hydrogen and carbon
2	Alkane	The simplest hydrocarbon containing only single bonds. $\text{C}_n\text{H}_{2n+2}$
3	Saturated	A molecule that only contains single bonds e.g. Alkanes
4	Alkene	An unsaturated hydrocarbon. C_nH_{2n}
5	Viscosity	How runny or gloopy a substance is

N°	Fractional distillation
6	<p>Crude oil is heated to evaporation</p> <p>The vapors pass into the column which has a temperature gradient</p> <p>Longer chains cool and condense lower in the column</p> <p>Shorter chains cool and condense higher in the column</p> <p>Longer chains have higher boiling points</p> <p>Longer chains have higher boiling points as they have more intermolecular forces to overcome</p>



N°	Facts
7	We can test for alkenes using bromine water. It goes from orange to colourless
8	The longer the hydrocarbon chain, the higher the viscosity (more goopy)
9	The longer the hydrocarbon chain, the higher the boiling point
10	The longer the hydrocarbon chain, the lower the flammability

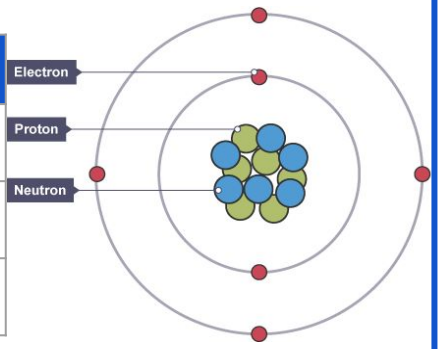
N°	Cracking hydrocarbons
11	Cracking uses steam/high temperature and a catalyst to break long chain alkanes into a shorter alkane and at least one alkene



Physics

GCSE Atomic structure and radiation

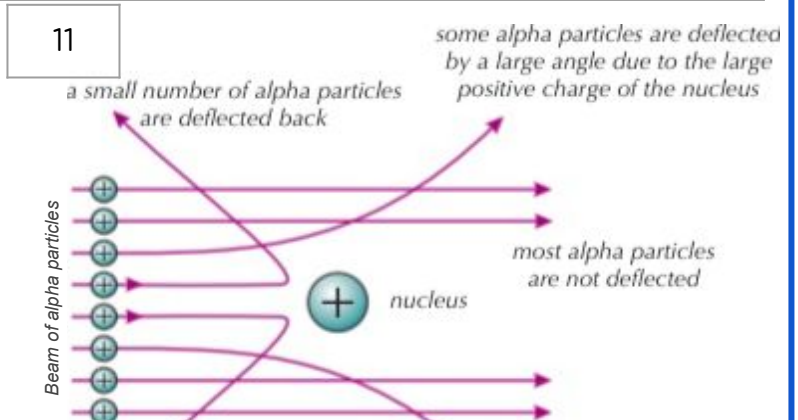
N ^o	Particle	Mass	Charge
1	Proton	1	+1
2	Neutron	1	0
3	Electron	1/2000	-1



Learned	Revised	Confident
_____ % Achieved: _____		

N ^o	Keyword	Definition
4	Activity	The number of nuclei of a sample that decay per second
5	Contamination	Has unwanted radioactive atoms on or in it
6	Half life	The time it takes for the number of nuclei of a radioactive isotope in a sample to half
7	Ion	A charged particle (an atom that has gained/lost electrons)
8	Irradiation	Exposure to radiation
9	Isotope	An element with a different number of neutrons

10	11
<p>SOLID SPHERE MODEL</p> <p>JOHN DALTON 1803</p>	<p>PLUM PUDDING MODEL</p> <p>J.J. THOMSON 1904</p>
<p>NUCLEAR MODEL</p> <p>ERNEST RUTHERFORD 1911</p>	<p>PLANETARY MODEL</p> <p>NIELS BOHR 1913</p>



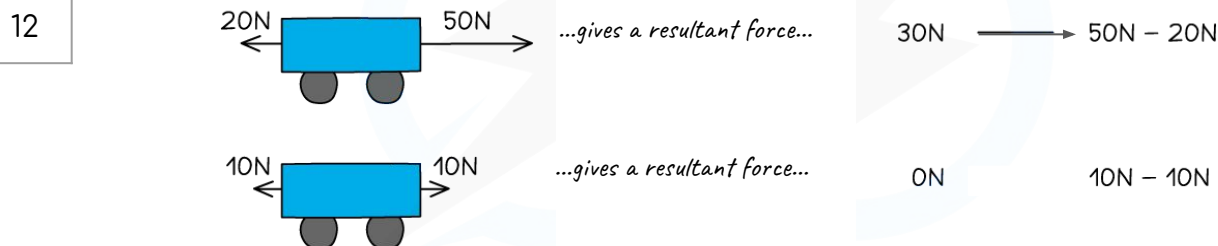
N ^o	Type of radiation	Change in the nucleus	Ionising power	Range in air	Stopped by
12	α alpha particle (two protons and two neutrons)	nucleus loses two protons and two neutrons	highest ionising power	travels a few centimetres in air	stopped by a sheet of paper
13	β beta particle (fast-moving electron)	a neutron changes into a proton and an electron	high ionising power	travels \approx 1 m in air	stopped by a few millimetres of aluminium
14	γ gamma radiation (short-wavelength, high-frequency EM radiation)	some energy is transferred away from the nucleus	low ionising power	virtually unlimited range in air	stopped by several centimetres of thick lead or metres of concrete

GCSE Forces

Learned	Revised	Confident
_____ % Achieved: _____		

N°	Contact forces	Non contact forces
1	Air resistance Drag Friction Lift Normal contact force Tension Thrust Uplift	Electrostatic forces Gravitational forces (weight) Magnetic forces

N°	Keyword	Definition
2	Contact force	Occurs when two objects must touch for a force to act
3	Centre of mass	The point at which you assume the entire mass of an object is concentrated
4	Elastic deformation	The object can go back to its original shape and size when the forces are removed
5	Hooke's law	The extension of an elastic object is directly proportional to the force applied provided that the limit of proportionality is not exceeded
6	Inelastic deformation	The object does NOT go back to its original shape and size when the forces are removed
7	Limit of proportionality	The point at which an elastic object stops obeying Hooke's law
8	Non contact force	Occurs when two objects do NOT need to touch for the force to act
9	Resultant force	A single force that can replace all other forces acting on an object to give the same effect as the original forces acting altogether
10	Scalar	Scalar quantities have magnitude only (eg. distance and speed)
11	Vector	Vector quantities have magnitude AND direction (eg. velocity and force)



N°	Equations to learn
13	Weight = mass x gravitational field strength
14	Work done = force x distance
15	Force = spring constant x extension

GCSE Forces (2)

1 Typical speeds



1.5 m/s



6 m/s



55 m/s



330 m/s (IN AIR)



3 m/s



25 m/s



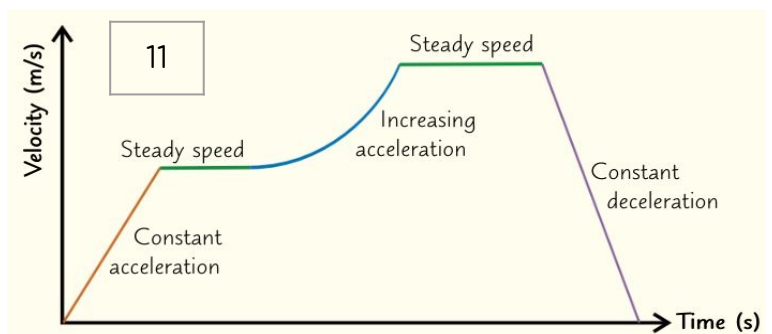
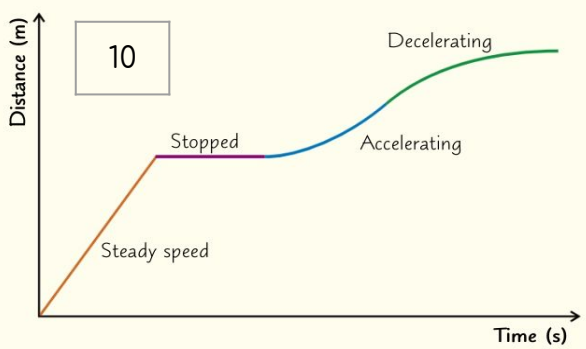
250 m/s

Learned Revised Confident

_____ % Achieved: _____

Nº	Keyword	Definition
2	Displacement	A measure of an object's distance and direction in a straight line from its starting point to its finishing point on a journey.
3	Velocity	Speed in a given direction.
4	Braking distance	The distance moved by a vehicle, once the brakes are applied (affected by the conditions of the road, brakes and tyres)
5	Thinking distance	The distance moved by a vehicle, during the drivers reaction time (affected by tiredness, drugs, alcohol, distractions)
6	Stopping distance	Thinking distance + braking distance

Nº	Newton's laws of motion
7	(1) If the resultant force on a stationary (still) object is zero, the object will remain stationary. If the resultant force on a moving object is zero, the object will keep moving with the same velocity. If there is a non-zero resultant force acting on an object, its velocity will change (accelerate).
8	(2) Acceleration is directly proportional to force (more force, more acceleration). Acceleration is inversely proportional to mass (more mass, less acceleration)
9	(3) When two objects interact, the forces they exert on each other are equal and opposite



Nº	Equations to learn
12	Distance travelled = speed x time
13	Acceleration = $\frac{\text{change in velocity}}{\text{time}}$
14	Resultant force = mass x acceleration
15	(HIGHER ONLY) Momentum = mass x velocity