YEAR 11

Autumn Term 1b: Inheritance, Variation and Evolution, Organic chemistry, Waves

THE MILTON KEYNES ACADEMY
Creative Education Trust

Key Vocabulary for Lessons

Gamete	Sex cell (egg or sperm cell)
Asexual reproduction	Involves only one individual and the offspring is identical to the parent. There is no fusion of gametes or mixing of genetic information.
Variation	Differences between or within a species.
Meiosis	Two stage process of cell division that reduces the chromosome number of daughter cells. It is involved in making gametes for sexual reproduction.
Haploid	Cells that contain half the amount of genetic information.
Fertilisation	Egg and sperm cell fuse together to form a zygote.
Genome	The complete set of genes or genetic material present in a cell or organism.
Gene	A small section of DNA on a chromosome.
Chromosome	A chromosome is a thread-like structure made up of DNA.

Alleles	Different forms of the same gene sometimes referred to as variants.
Recessive	A phenotype that will only show up in the offspring if both of the alleles coding for that characteristic are inherited.
Heterozygous	Individual with different alleles for a characteristic.
Sex chromosomes	Carry the information that determines the sex of an individual.
Genotype	The genetic makeup of an individual regarding a particular characteristic.
Natural selection	The process by which evolution takes place. Organisms produce more offspring than the environment can support. Only those that are most suited to their environment will survive to breed and pass on their useful characteristics to their offspring.
Evolution	The change in the characteristics of a species over several generations and relies on the process of natural selection.
Species	The smallest group of clearly identified organisms in Linnaeus's classification system, often described

	as a group of organisms that can breed together and produce fertile offspring.
Selective breeding	Speeds up natural selection by selecting animals or plants for breeding that have a required characteristic.
Inbreeding	Mating of close relatives in species that are normally outbreeding. More prone to certain disease/inherited defects. Less variation within a population.
Offspring	The product of the reproductive processes of a person, animal, or plant.
Genetic Engineering	The process by which scientists can manipulate and change the genotype of an organism.
Gene	Small section of DNA on a chromosome, that code for a particular sequence of amino acids, to make a specific protein.
Mutation	Change in the sequence of DNA.
Gene therapy	Gene therapy is a technique that modifies a person's genes to treat or cure disease.
Genetic modification	A process that uses laboratory-based technologies to alter the DNA makeup of an organism.

Evaluate	Use the information supplied, as well as their knowledge and understanding, to consider evidence for and against when making a judgement.
Fossil	Preserved remains of plants and animals whose bodies were buried in sediments, such as sand and mud, under ancient seas, lakes and rivers.
Preservation	The activity or process of keeping something valued alive, intact, or free from damage or decay.
Amber	Fossil tree resin.
Extinction	Permanent loss of all members of a species.
Asteroid	Small, rocky objects that orbit the Sun.
Global warming	Describes the current rise in the average temperature of Earth's air and oceans.
Antibiotic resistance	When strains of bacteria that have developed resistance to many different types of antibiotics. This means they are no longer affected by the antibiotic.
Antibiotics	Drug that kills bacteria.
Strain	A strain is a genetic variant, a subtype or a culture within a biological species.

Classification	The process of arranging organisms, both living and extinct, into groups based on similar characteristics.
Three domain system	The updated system divides organisms into: Archaea (primitive bacteria usually living in extreme environments) Bacteria (true bacteria) Eukaryota (including protists, fungi, plants and animals).
Binomial system	System of naming species uses Latin words. Each name has two parts, the genus and the species.

Molecular formula	The actual number of atoms of each element present in the compound
Homologous series	A family of compounds with the same general formula and similar chemical properties.
Hydrocarbon	A compound containing carbon and hydrogen only.
Fraction	A mixture of hydrocarbon molecules with similar boiling points
Fractional distillation	A method used to separate a mixture of liquids with different boiling points.
Non-renewable fuel	A fuel that will run out or will not be replenished in our lifetime.
Viscosity	How easily a liquid flows.

Volatility	Volatility describes how easily a substance will vaporise (turn into a gas or vapor).
Flammability	How easily a substance catches fire.
Unsaturated	In the context of organic chemistry, a molecule that contains one or more double bonds between carbon atoms C=C
Polymer	A long chain molecule in which lots of small molecules are joined together
Monomer	The building block (molecule) of a polymer.
Cracking	The process of breaking down the larger, heavier, and more complex hydrocarbon molecules into simpler and lighter molecules
Catalytic cracking	Passing long chain hydrocarbon vapour over a catalyst causing the longer chains to crack into shorter more useful ones.
Feedstock	Raw materials for the chemical industry. *(Something that is used to make another product)*.
Functional Group	Atom or group of atoms responsible for most of the chemical reactions of a compound
Incomplete combustion	Functional Group When a substance burns with a poor supply of oxygen
Addition Reaction	A reaction when atoms bond to the carbon atoms in a C=C to forma saturated compound
Oxidising agent	A chemical that oxidises other substances

Fermentation	An anaerobic process in which glucose is turned into ethanol and carbon dioxide
Biofuel	Fuels made from plant materials, (these include biodiesel made from plant oils and bioethanol, made from fermenting sugar)
Carboxylic acid	A homologous series with a –COOH functional group
Ionisation of acids	When an acid dissociates in water to form H^+ ions
Ester	A compound formed from the reaction of a carboxylic acid with an alcohol (with the loss of a water molecule)
Monomer	Small molecules which join to make a large molecule with repeating units (a polymer)
Addition Polymerisation	Unsaturated monomers (alkenes) join to make a polymer as the only product
Condensation Polymerisation	When 2 monomers with different functional groups join to make a polymer plus a water molecule
Amino acid	Molecule containing both a carboxylic acid and an amine functional group.
Protein	Polymer molecule made from lots of amino acids

Naturally occurring polymer	These occur in nature, examples include DNA, starch, Cellulose and proteins

Wavelength	The distance between identical points in a wave train
frequency	The number of waves that pass in a second
spectrum	A range in which a series of types of waves sit
Oscillation	A type of movement
amplitude	The displacement of a wave from the direction of travel
medium	A substance that a wave or energy travels through e.g. air
parallel	Two lines or surfaces that are side by side
Perpendicular	Two lines or surfaces that are at 90 degrees to each other
Time period	How long it takes in seconds for a wave to pass through a set point
electric field	Area surrounding an electric charge that may influence other charged particles.
electrostatic force	A force of attraction between particles with opposite charges
wave	A transfer of energy and information across a medium

compression	Where particles in a longitudinal wave are close together
vacuum	A region of space without any matter
magnetic field	Area surrounding a magnet that can exert a force on magnetic materials
Emit	To give out or release
absorb	To take in
Refract	A wave bending and changing direction

GCSE Pod Homework

- Homework will be set via GCSE Pod every week
- You will be given a set of questions alongside short videos.
- Each week will be a different discipline and will recap your prior learning.

Additional Opportunities

If you wish to further develop your skills and knowledge for GCSE Combined/triple Science, you can use the following links:https://www.youtube.com/@Cognitoedu -Cognito

https://www.physicsandmathstutor.com/ - Past papers with mark schemes for all sciences (Exam board: AQA)