



**Combined Science Revision: Summer Term 2024**

1 assessment: 45 minutes.

Calculator, ruler, pencil, protractor are required for all assessments.

<b>Biology Topic 1: Cell Structure &amp; Transport</b>	<b>R</b>	<b>A</b>	<b>G</b>
Eukaryotes & Prokaryotes – differences in structure			
Animal and Plant Cells – functions of organelles			
Required Practical: microscopy - observe, draw, and label plant and animal cells.			
Cell specialisation – muscle cell, nerve cell, sperm cell.			
Cell differentiation			
Microscopy – using a microscope and magnification calculations			
Chromosomes			
Mitosis and the cell cycle			
Stem cells			
Diffusion			
Osmosis			
Active Transport			
Required practical: effect of sugar or salt concentration on mass of plant tissue			

<b>Biology Topic 6: Inheritance</b>	<b>R</b>	<b>A</b>	<b>G</b>
Gametes as sperm, egg, and pollen cells.			
Sexual and asexual reproduction.			
The structure of DNA and the human genome.			
Dominant and recessive alleles; homozygous and heterozygous genotypes.			
Identifying the phenotype from the genotype.			
Construction of Punnett squares to calculate the probability of offspring with genotypes and phenotypes.			
Inherited disorders: polydactyl & cystic fibrosis.			

Sex determination from the sex chromosome: XX and XY			
Variation is the differences within a species.			
Species have changes over time due to evolution by natural selection.			
How selective breeding causes the evolution of plants and animals with desired characteristics: advantages and disadvantages.			
Genetic engineering: introducing a gene from another organism.			
Evidence for evolution from fossils and antibiotic resistance.			
Fossils: what they are and how they are formed.			
Extinction: what it is and how extinction occurs.			
Resistant bacteria: how it occurs, and how it can be prevented.			

Chemistry Topic 1: Atomic Structure and Periodic Table	R	A	G
Atoms, elements, compounds			
Filtration			
Crystallisation			
Distillation			
Chromatography			
How the model of the atom changed (Democritus, Dalton, Rutherford, Bohr, Chadwick)			
Relative charges of subatomic particles			
Size and mass of atoms			
Relative atomic mass and its calculation			
Electronic structures of elements with atomic numbers 1-20			
Arrangement of the modern periodic table			
Development of the periodic table			
Group 0 – electron structure, patterns and reasons for reactivity, boiling point			
Group 1 (alkali metals)– electron structure, patterns and reasons for reactivity, reactivity with water,			
Group 7 (halogens) - electron structure, patterns and reasons for reactivity, melting point, boiling point, displacement reactions of halogens.			

Physics Topic 1: Energy stores and transfers	R	A	G
Changes in energy stores in common situations: projectiles, acceleration slowing down, boiling water.			
Energy transferred by heating, forces, electrical current flowing.			
Calculating kinetic energy of a moving object			
Calculating the elastic potential energy of a stretched or compressed object.			
Calculate the energy stored in an object held above the ground.			
Calculate the energy required to change the temperature (specific heat capacity)			
Required practical: determine the specific heat capacity of one or more materials.			
Power as the rate of work done or energy transferred.			
Energy dissipation during movement between stores.			
How unwanted energy dissipation can be reduced i.e. lubrication and insulation.			
Conductivity as the rate of energy transfer through a material.			
Efficiency as the ratio or percentage of useful energy output to total energy input.			
Non-renewable sources as ones which are being used up faster than they are replenished.			
Renewable sources as ones which can be replenished as they are used.			
Compare how different energy resources are used.			
Describe the environmental impact of energy resources.			

**Other useful revision resources:**

<https://cognitoedu.org/home> - revision videos and access to past papers and exam questions with mark schemes. Follow the list of topics above.

<https://www.kayscience.com/> - more revision videos and quizzes to support your revision.

<https://www.bbc.co.uk/bitesize/examspecs/z8r997h> - BBC Bitesize – AQA Combined Science

<https://filestore.aqa.org.uk/resources/science/specifications/AQA-8464-SP-2016.PDF> - AQA Combined Science GCSE Specification. Read chapters 4, 5 and 6 for exam specific content.