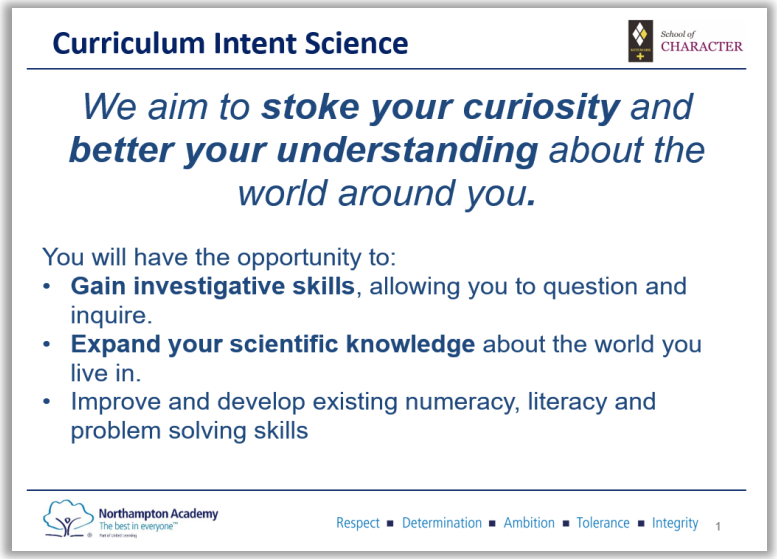
Medium Term Planning Document: Science Year 8

Curriculum Intent:

During KS3 pupils will develop an appreciation for the fundamentals of how the world works. Students will develop their scientific thinking and curiosity through theory and investigation. Their factual knowledge will cover a wide range of scientific topics, allowing them insight into the three main subject areas: Biology, Chemistry and Physics, focussing on key ideas. In Biology this ranges from understanding of cells and microscopic level of life through to large scale understanding of life processes in ecology. Chemistry focuses on the study of the atom and the importance of how atoms interact through to the macroscopic effects on the atmosphere and key resources. In Physics, students study key ideas around Energy, Forces and waves to explain the underlying processes of the Universe. Students will develop and apply basic mathematical skills to a range of scientific contexts. Pupils will be introduced to a variety of new terms and will learn to effectively use these to better communicate scientific ideas. Overall this curriculum will give students the knowledge, skills and character to excel and spark their curiosity to learn more. Students will also be exposed to careers and learn about the types of careers that would use the knowledge they will learn about in each of their topics.



'Why This, Why Now?'

In our planning, we have asked ourselves 'why this, why now?' Here we provide some examples of the curriculum choices we have made, and why the units have been placed in the order we have chosen:

- In Year 8, we introduce the Bohr model of the atom. This is an important part of the vertical concept, 'reactions rearrange particles', which begins in Year 7 with 7CC Chemical Reactions. The Bohr model is revisited in Atomic Structure and Periodic Table in Key Stage 4 chemistry, as well as Atomic Structure in physics, and is prerequisite knowledge for the next chemistry topic, Bonding, which in turn is foundational to many of the remaining chemistry units.
- In biology, the idea that 'species show variation' is central to understanding how organisms have evolved. This idea is introduced in Year 7 with 7BR Reproduction and Variation, with Darwinian natural selection introduced in Year 8, with 8BE Ecological Relationships & Classification. The genetic underpinning of variation is introduced in 9BB Biological Systems and Processes and developed further, alongside evolution and speciation in Key Stage 4 in Inheritance and Selection.

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The Medium Term Planning document below is designed to show the journey that every student takes through our curriculum. Some elements of the curriculum may be taught over several lessons, others in a single lesson.

Science	Year 8 – Half Term 1			
Topic	**Content**	**Key Words**	**Formative Assessments?**	**Link(s) to an example lesson**
8PL – Light and space	Light waves Reflection and refraction Vision Colour Gravity and weight Seasons The Universe	Reflection Refraction Absorption Scattering Vacuum Concave lens Convex lens Normal line Spectrum Orbit Satellite Hemisphere	Bell work- retrieval quizzes KPI formative assessment checks throughout the topic Fact recall (including skills questions) quizzes every week set as a home learning task	https://continuityoak.org.uk/lessons Click 'KS3 Science' Click 'Unit 1 – Light and Space'

Science	Half Term 2			
Topic	**Content**	**Key Words**	**Formative Assessments?**	**Link(s) to an example lesson**
	Elements		Bell work- retrieval quizzes	https://continuityoak.org.uk/lessons

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8CP – Periodic table	Atomic models Compounds Conservation of mass Groups 1, 7, 0	Atom Element Compound Mixture Reactants Products Electron Proton Neutron Nucleus Mendeleev Atomic number Atomic mass	KPI formative assessment checks throughout the topic Fact recall (including skills questions) quizzes every week set as a home learning task	Click 'KS3 Science' Click 'Unit 2 - Atoms and The Periodic Table'
8BD – Digestion and nutrition	Diet Energy release Food test Digestive system Digestive enzymes	Iodine Benedict's solution Biuret Ethanol Salivary Glands	Bell work- retrieval quizzes KPI formative assessment checks throughout the topic Fact recall (including skills questions) quizzes every week set as a home learning task	https://continuityoak.org.uk/lessonsClick 'KS3 Science' Click 'Unit 3 - Digestion and Nutrition'

		Oesophagus Gall Bladder Pancreas Enzymes Protease Amylase Lipase Glucose Amino Acids Fatty Acids Glycerol		

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Science	Year 8 – Half Term 3			
Topic	**Content**	**Key Words**	**Formative Assessments?**	**Link(s) to an example lesson**
8PE – Electricity and magnetism	Circuits Series and parallel circuits Potential difference Resistance Static electricity Magnetism Electromagnetism	Complete Circuit Current Amps (A) Potential Difference Volts (V) Resistance Ohms (Ω) Conductor Insulator Static Electricity Magnetic field Electromagnet	Bell work- retrieval quizzes KPI formative assessment checks throughout the topic Fact recall (including skills questions) quizzes every week set as a home learning task	https://continuityoak.org.uk/lessons Click 'KS3 Science' Click 'Unit 4 - Electricity and Magnetism'

Science	Year 8 HT4			
Topic	**Content**	**Key Words**	**Formative Assessments?**	**Link(s) to an example lesson**
8CM – Materials and the Earth	Structure of the Earth Igneous rocks Sedimentary rocs Metamorphic rocks	Monomer Polymer	Bell work- retrieval quizzes KPI formative assessment checks throughout the topic Fact recall (including skills questions) quizzes every week set as a home learning task	https://continuityoak.org.uk/lessons Click 'KS3 Science' Click 'Unit 5 - Materials and the Earth'

	Fossils Fossil fuels Changes in the atmosphere Resources and recycling	Composites Earth's Core Earth's Mantle Earth's Crust Igneous Sedimentary Metamorphic Weathering Erosion Carbon Dioxide Combustion		
8BE – Ecological relationships (Review – as covered in Y7)	Food webs Decay Impacts on food webs Sampling populations Classification Adaptation Evolution Biodiversity	Producer Consumer Herbivore Carnivore Omnivore Variation Natural Selection Extinct Biodiversity Mutation Gene Pesticide Bioaccumulation Habitat	(Revision)	https://continuityoak.org.uk/lessons Click 'KS3 Science' Click 'Unit 7 – Ecological Relationships and Classification' (in the Year 7 section)

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Science	Year 8 – Half Term 5		
Topic	**Content**	**Formative Assessments?**	**Link(s) to an example lesson**
Revision, End of Year Assessments and Character lessons	8BD and 8BE review 8CP and 8CM review 8PL and 8PE review Assessments and Feedback Character lessons	(Revision)	https://continuityoak.org.uk/lessons Click 'KS3 Science' Click any of the following topics: 8BD, 8BE, 8CP, 8CM, 8PL, 8PE

Science	Year 8 – Half Term 6			
Topic	**Content**	**Key Words**	**Formative Assessments?**	**Link(s) to an example lesson**
9BP – Plants and photosynthesis	Plant roots Photosynthesis Uses of glucose Rate of photosynthesis Leaf adaptations Transport in plants Plants and the atmosphere Plants as food	Photosynthesis Glucose Starch Chloroplast Chlorophyll Stomata Guard Cells Xylem Phloem Pollination Root hair cell	Bell work- retrieval quizzes KPI formative assessment checks throughout the topic Fact recall (including skills questions) quizzes every week set as a home learning task	https://continuityoak.org.uk/lessons Click 'KS3 Science' Click 'Unit 6 – Plants and Photosynthesis' - In the Year 8 topics

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9PM – Matter	Particle model Density Diffusion and Brownian motion Pressure in a liquid Upthrust Atmospheric pressure Particle model	Pressure Pascal (Pa) Upthrust Sublimation Brownian Motion Density Chemical changes Physical changes Fluid Atmospheric Pressure	Bell work- retrieval quizzes KPI formative assessment checks throughout the topic Fact recall (including skills questions) quizzes every week set as a home learning task	https://continuityoak.org.uk/lessons Click 'KS3 Science' Click 'Unit 7 – Matter' - In the Year 8 Topics

Summative Assessment:

Pupils will complete two Synoptic papers (Paper 1 within the 2nd half term, and Paper 2 within the 3rd half term). Pupils will also complete three End-of-Year assessments – broken down by each Science. These assessments will inform Rank Order and will therefore inform group moves once this data is published to students and parents.

Extra Support	SEND Adaptations
We primarily address the needs of our students by continually improving our teaching and ensuring high quality lessons. To ensure **all** students, regardless of	• Instructions kept short and clear • Use of a 'slow practical' approach • Use of visual practical sheets

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SEND needs or ability can access the content, we also embed the following measures in our lessons -->	• Planning lessons with a common predictable structure (Do now, I, We You, etc) • Use clear timings for task completion where appropriate • Using scaffolds for calculations (VESRAU) • Lots of key term repetition to aid with retention • Model answers/scaffolding for written work • Coloured resources for students with visual stress