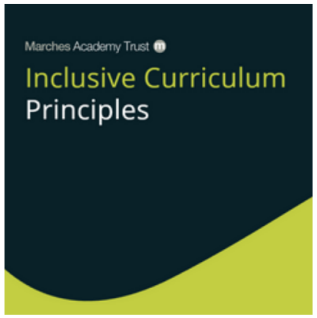
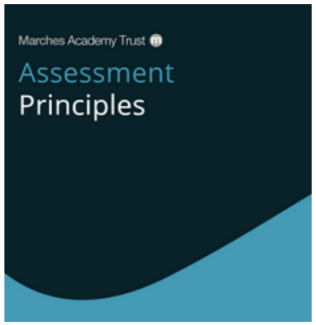
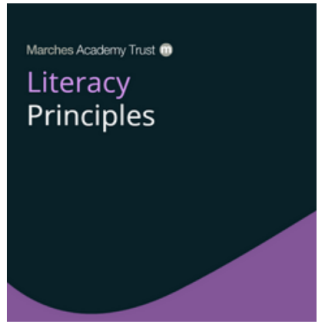
2026-2028 CURRICULUM









What is our curriculum development work focused on?

Building and strengthening the foundation offer through:

1. **K**S2-KS5 sequencing (disciplinary and substantive knowledge).
2. **V**ocabulary- tier 2 and 3
3. **D**isciplinary Literacy

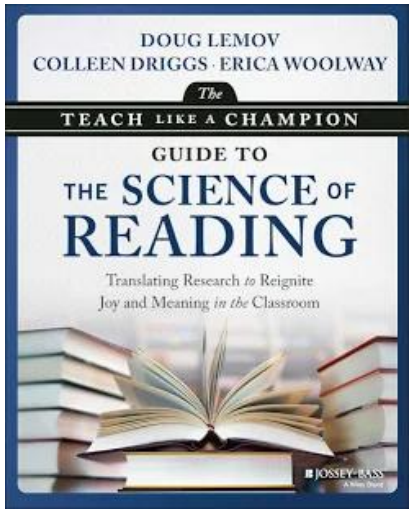
Oracy: threaded through all 3 areas. Can students speak it?

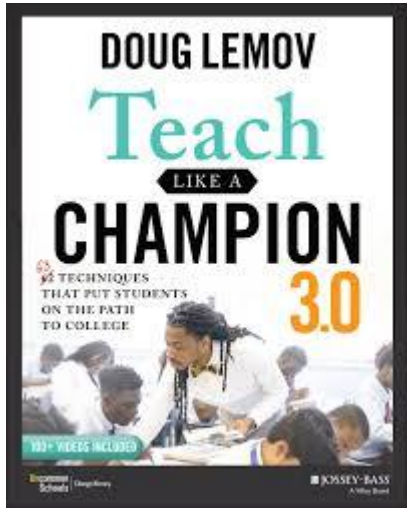
Implemented through:

- ELET (TLAC + Science of Reading strategies)

SJT Every Lesson Every Time

1 step at a time Curriculum planning is crafted to ensure low cognitive load for all	• **Accessible resources** : clear, inclusive and adapted materials. • **Regulation breaks** built into lesson plans as appropriate. • Clear and **concise language** for instruction. • **Chunk instructions** : clear, manageable steps.
2 consistent routines (entrance and exit) A calm and consistent classroom environment for all	• **Entrance routine:** students invited in, meet and greet, equipment out. • **Do now:** based on retrieval and visible on entry. • **High expectations:** established and repeated throughout. • **Exit routine:** 2 minutes before the bell- students stand behind chairs before dismissal. Circulate the room to assess standards of work.
3 checks for understanding All are made to think hard, and AFL is used to inform future adaption	• **Lesson planning** crafts opportunities for AFL to assess learning. *E.g. 3,2,1 show me boards, cold call, active observation, exit tickets.* • **Circulate:** monitor behaviour, presentation, literacy and address misconceptions. • **Adapt**: through re-teaching, giving feedback, scaffolding or challenge. • **Respond**: students reflect/act on the feedback live in lessons.
Look **4** the scaffold Modelling and support for all to be successful	• Informed by assessment of current knowledge and skill. • **Scaffold:** gradually taken away. I do, we do, you do. • **Model and WAGOLL:** show what success looks like from the start.
5 foundational skills All lessons are planned to adapt to literacy and numeracy data utilising foundational skills were appropriate.	• **Academic language:** Key 3 explicit vocabulary identified, displayed and checked for understanding. • **Communication**: speaking and listening opportunities scaffold talk and promote oracy. • **Reading:** AIR and FASE techniques are used to aid reading fluency and comprehension. • **Writing:** focus on SPaG, handwriting and disciplinary writing skills. • **Numeracy:** planning for numeracy application across the curriculum.





What academic research underpins our curriculum work?

Education Endowment Foundation

IMPROVING LITERACY IN SECONDARY SCHOOLS

Summary of recommendations

1 Prioritise 'disciplinary literacy' across the curriculum



- Literacy is key to learning across all subjects in secondary school and a strong predictor of outcomes in later life.
- Disciplinary literacy is an approach to improving literacy across the curriculum that emphasises the importance of subject specific support.
- All teachers should be supported to understand how to teach students to read, write and communicate effectively in their subjects.
- School leaders can help teachers by ensuring training related to literacy prioritises subject specificity over general approaches.

2 Provide targeted vocabulary instruction in every subject



- Teachers in every subject should provide explicit vocabulary instruction to help students access and use academic language.
- Effective approaches, including those related to etymology and morphology, will help students remember new words and make connections between words.
- Teachers should prioritise teaching Tier 2 and 3 vocabulary, which students are unlikely to encounter in everyday speech.
- Teachers and subject leaders should consider which words and phrases to teach as part of curriculum planning.

3 Develop students' ability to read complex academic texts



- Training focused on teaching reading is likely to help secondary school teachers teach their subject more effectively.
- To comprehend complex texts, students need to actively engage with what they are reading and use their existing subject knowledge.
- Reading strategies, such as activating prior knowledge, prediction and questioning can improve students' comprehension.
- Strategies can be introduced through modelling and group work, before support is gradually removed to promote independence.

4 Break down complex writing tasks



- Writing is challenging and students in every subject will benefit from explicit instruction in how to improve.
- Teachers can break writing down into planning, monitoring and evaluation, and can support students by modelling each step.
- Targeted support should be provided to students who struggle to write fluently, as this may affect writing quality.
- Teachers can use a variety of approaches, including collaborative and paired writing, to motivate students to write.

5 Combine writing instruction with reading in every subject



- Combining reading activities and writing instruction is likely to improve students' skills in both, compared to a less balanced approach.
- Reading helps students gain knowledge, which leads to better writing, whilst writing can deepen students' understanding of ideas.
- Students should be taught to recognise features, aims and conventions of good writing within each subject.
- Teaching spelling, grammar and punctuation explicitly can improve students' writing, particularly when focused on meaning.

6 Provide opportunities for structured talk



- Talk matters: both in its own right and because of its impact on other aspects of learning.
- High quality talk is typically well-structured and guided by teachers.
- Accountable talk is a useful framework to ensure talk is high quality, and emphasises how talk can be subject specific.
- Teachers can support students by modelling high quality talk, for example including key vocabulary and metacognitive reflection.

7 Provide high quality literacy interventions for struggling students



- Schools should expect and proactively plan to support students with the weakest levels of literacy, particularly in Year 7.
- Developing a model of tiered support, which increases in intensity in line with need is a promising approach.
- Assessment should be used to match students to appropriate types of intervention, and to monitor the impact of interventions.
- Creating a co-ordinated system of support is a significant challenge requiring both specialist input and whole school leadership.

Science

Our vision in Science

We are striving to inspire students to be curious about the world around them and to understand the scientific ideas that shape their lives. Through investigation, discovery, and critical thinking, students will develop the knowledge and skills needed to question evidence, solve problems, and make informed decisions. The seeds that Science gives them will grow into curiosity, confidence and a lifelong appreciation of our planet and the wider universe.

Marches Academy Trust

Sir John Talbot's school

Science

What is my Learning Journey for Year 7?

Marches Academy Trust

We have derived our curriculum from the AQA Activate Scheme of Learning

Key Skills:

- Recall and retention of scientific facts
- Using key scientific terminology
- Calculations and equations
- Graph skills
- Analysing and interpreting data
- Evaluating information
- Using models

Assessments:

- Knowledge checks per topic
- Assessments every double topic
- 6-mark BUG questions per term
- Weekly Educake quizzes
- End of year assessment

#realworldready

- Consider the impacts of humans on ecosystems and organisms around the world
- Appreciate how understating the menstrual cycle has led to contraception and fertility treatments
- Find out how chemical reactions can be used to make useful, everyday products
- Know what all materials are made up of
- Find out where our energy comes from and how we can be more energy efficient

Useful websites and support

- KS3 Bitesize
-Oak Academy KS3 science
-Educake (login provided)

YEAR 8



Food chains and webs, ecosystems, competition, pollination, fertilisation and germination, seed dispersal.
Big question: What happens to organisms if ecosystems change?

Ecosystems



Geology and Astronomy



The structure of Earth, Rock cycles, Solar system, Moon and changing ideas.
Big question: How big is the solar system?

Forces and Speed



Measuring forces, unbalanced & balanced forces, speed & gravity.
Big questions: How can we measure speed? Where do forces come from?

Variation, adaptation, puberty, reproductive systems, sexual intercourse, pregnancy and the menstrual cycle.
Big question: How are new humans made?

Inheritance and Reproduction



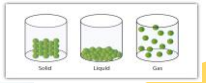
Reactions





Acids & alkalis & pH, neutralization, making salts, elements, reactions of non-metals &metals with water, acid & oxygen, displacement reactions.
Big question: What are chemical reactions?

States of Matter





The particle model, states of matter, changes of state, diffusion, pressure, pure substances & mixtures, solutions and separating techniques.
Big question: What are materials like inside?

Circuits and Electricity







Potential difference and resistance, series and parallel circuits, current and charge.
Big question: How can one light in your house go out but the rest stay on?

Baseline assessment



Cells and Organ Systems





Skeleton, joints & muscles, cells & microscopes, movement of substances & unicellular organisms
Big question: What are we made of?

Energy



Different energy resources and fuels, power and energy transfers.
Big question: How will we generate electricity in the future?

Enquiry skills



Safety in the laboratory
Equipment in the laboratory
The scientific method

Home Learning

- Weekly Educake quizzes
- Revision for knowledge checks and assessments
- Enrichment projects over term breaks

Year 7 Curriculum Overview- Science

Content Topic/unit name, enquiry question	**Disciplinary Knowledge (Skills)** Actions taken within a topic to gain substantive knowledge	**Substantive Knowledge** This is the specific, factual content for a topic, which is connected into a careful sequence of learning	**Prior Learning (KS2)**	**Future learning (KS3)**
Enquiry Skills	Using all of the practical skills listed as substantiative knowledge through a series of individual experiments each designed to teach a specific skill so all students start year 7 with the same basic tools needed in science	Lab safety Scientific apparatus Creating a hypothesis Writing a method Recording results Drawing a graph Evaluation	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary (KS2)	Skills used continually under the name “Working Scientifically” at GCSE
Energy	Interpret observations to draw conclusions for multiple experiment Complete practical work safely having due regard from accuracy	Food and energy Energy resources Energy and power calculations Energy adds up Efficiency and calculations	No prior knowledge.	Work Energy Machines Energy and temperature Energy Transfer Radiation and insulation
Cells and Organ Systems	Follow a method to safely complete experiments, - record observations, drawing conclusion from observations made. Practicals completed taking safety into account.	Levels of organization Skeletons, joints and muscles, microscopes, Plant and animal cells Respiration Photosynthesis Specialised cells Movement of substances	Identify that humans and some other animals have skeletons and muscles for support, protection and movement (Year 3) Know that the body is made up different organs (looked specifically at digestive system and circulatory system in Year 4 and 6) Recall definitions of cell, tissue, organ and organ system (from lesson 1 in unit)	Gas exchange Breathing Smoking Nutrients Food tests Unhealthy diet Enzymes in digestion

Year 7 Curriculum Overview- Science

Content Topic/unit name, enquiry question	**Disciplinary Knowledge (Skills)** Actions taken within a topic to gain substantive knowledge	**Substantive Knowledge** This is the specific, factual content for a topic, which is connected into a careful sequence of learning	**Prior Learning (KS2)**	**Future learning (KS3)**
States of Matter	Investigate stearic acids melting point through follow a method safely, recording observation into a table and plotting graphs to draw a conclusion Revisit types of variables Use models such as representational, spatial, descriptive to make predictions and to develop scientific explanations and understanding of unfamiliar knowledge Complete range of practicals on separation techniques to make observations	The particle model States of matter Changing state Diffusion Gas pressure Inside particles Purity Solutions and solubility Separation techniques Chromatography	Compare and group materials together, according to whether they are solids, liquids or gases Compare and group together everyday materials on the basis of their properties Compare and group materials together, according to whether they are solids, liquids or gases Decide how mixtures might be separated, including through filtering, sieving and evaporating	Elements, atoms, compounds, chemical formulae, polymers, the periodic table
Circuits and Electricity	Using circuit symbols to draw and then create circuits to predict, observe, record, and evaluate results from series and parallel circuits Use a range of suitable equipment to measure resistance of different wires Correctly choose the variables for the experiment	Potential difference Resistance Series and parallel circuits Current and charge	Construct a simple series electrical circuit, identifying and naming its basic parts. Identifying and naming basic parts. Identify whether or not a lamp will light in a simple series circuit	Magnets and magnetic fields Electromagnets and their uses

Year 7 Curriculum Overview- Science

Content Topic/unit name, enquiry question	**Disciplinary Knowledge (Skills)** Actions taken within a topic to gain substantive knowledge	**Substantive Knowledge** This is the specific, factual content for a topic, which is connected into a careful sequence of learning	**Prior Learning (KS2)**	**Future learning (KS3)**
Inheritance and Reproduction	The need and importance of peer review on scientific theories.	Variation Continuous and discontinuous Adapting to survive Reproduction Fertilisation Development of a fetus Menstrual cycle	Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago	Natural selection Charles Darwin Extinction Biodiversity History of DNA Inheritance Genetic modification
Reactions	Follow a method safely to combine acids and alkalis using various other chemical solutions to observe outcomes, record results and make conclusions.	Chemical reactions Acids and alkalis Neutralisation Making salts Chemical reactions of metals and acids	Hazards and risks	Atoms in chemical reactions Combustion Thermal decomposition Conservation of mass Exo and endothermic reaction
Forces and Speed	Follow a method to safely complete experiments, - record observations, and plotting results demonstrating forces using equipment such as newton meters, stop watches and metre rulers,	What a forces is Balanced and unbalanced forces Calculating speed Distance time graphs Gravity & weight calculations	Types of forces Forces make things move How to draw graphs Gravity pulls us down	Friction and Drag Squashing and stretching Turning Pressure in gases Pressure in solids

Year 7 Curriculum Overview- Science

Content Topic/unit name, enquiry question	**Disciplinary Knowledge (Skills)** Actions taken within a topic to gain substantive knowledge	**Substantive Knowledge** This is the specific, factual content for a topic, which is connected into a careful sequence of learning	**Prior Learning (KS2)**	**Future learning (KS3)**
Ecosystems	Create a hypothesis , a plan a method, collect data and record correctly.	Food chains and webs Popoulation changes Germination Ecological sampling	Construct and interpret a variety of food chains, identifying producers, predators and prey Recognise that environments can change and that this can sometimes pose dangers to living things	
Geology and Astronomy	Use models such as representational, spatial, descriptive to make predictions and to develop scientific explanations and understanding of unfamiliar knowledge	Structure of Earth Rock cycles The solar system The moon	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. Describe the movement of the Earth, and other planets, relative to the Sun in the solar system	Space topic in KS4 (if separate science chosen)

Science Y7 – **Key Vocabulary**

Topic	Key tier 2 and 3 vocabulary	Definition	Dual coding
Enquiry Skills	1. Hypothesis 2. Variable 3. Independent variable 4. Dependent variable 5. Control variable 6. Method 7. Conclusion 8. Evaluation	1. A testable scientific explanation or prediction. 2. A factor that can be changed, measured or controlled. 3. The factor deliberately changed in an investigation. 4. The factor measured or observed. 5. A factor kept the same to make a test fair. 6. A clear sequence of steps used in an investigation. 7. An explanation of what the results show. 8. A judgement about the quality of a method and evidence.	1.  2.  3.  4.  5.  6.  7.  8. 
Energy	1. Energy store 2. Transfer 3. Power 4. Joule 5. Watt 6. Resource 7. Renewable 8. Efficiency	1. A way energy is held in an object or system. 2. The movement of energy from one store to another. 3. The rate at which energy is transferred. 4. The unit used to measure energy. 5. The unit used to measure power. 6. A source that can be used to provide energy. 7. A resource that is naturally replaced. 8. The proportion of input energy transferred usefully.	1.  2.  3.  4.  5.  6.  7.  8. 
Cells and Organ Systems	1. Cell 2. Tissue 3. Organ 4. Organ system 5. Nucleus 6. Cytoplasm 7. Specialised 8. Respiration	1. The smallest structural unit of a living organism. 2. A group of similar cells working together. 3. A structure made of tissues that performs a function. 4. A group of organs working together. 5. The cell structure containing genetic material. 6. The jelly-like part of a cell where reactions occur. 7. Adapted to perform a particular function. 8. A process in cells that releases energy from glucose.	1.  2.  3.  4. 5.  6.  7.  8. 

Science Y7 – Key Vocabulary

Topic	Key tier 2 and 3 vocabulary	Definition	Dual coding
States of Matter	1. Particle 2. Solid 3. Liquid 4. Gas 5. Melting 6. Evaporation 7. Diffusion 8. Chromatography	1. A tiny piece used to model all substances. 2. A state with a fixed shape and fixed volume. 3. A state with fixed volume but no fixed shape. 4. A state with no fixed shape or volume. 5. The change of state from solid to liquid. 6. The change from liquid to gas at the surface. 7. The spreading of particles from high to low concentration. 8. A method used to separate dissolved substances.	
Circuits and Electricity	1. Current 2. Charge 3. Potential difference 4. Resistance 5. Component 6. Series circuit 7. Parallel circuit 8. Circuit symbol	1. The rate at which electric charge flows. 2. A property of matter carried through a circuit. 3. The energy transferred per unit of charge. 4. How much a component opposes current. 5. A part of an electrical circuit. 6. A circuit with a single pathway for current. 7. A circuit with more than one branch. 8. A standard diagram used to represent a component.	
Inheritance and Reproduction	1. Variation 2. Continuous variation 3. Discontinuous variation 4. Adaptation 5. Reproduction 6. Fertilisation 7. Embryo 8. Menstrual cycle	1. Differences between individuals of the same species. 2. Variation that can take any value within a range. 3. Variation placed into separate categories. 4. A feature that helps an organism survive and reproduce. 5. The process by which organisms produce offspring. 6. The joining of male and female sex cells. 7. An early stage of development after fertilisation. 8. A recurring cycle preparing the body for pregnancy.	

Science Y7 – Key Vocabulary

Topic	Key tier 2 and 3 vocabulary	Definition	Dual coding
Reactions	1. Reactant 2. Product 3. Acid 4. Alkali 5. Indicator 6. Neutralisation 7. Salt 8. Hazard	1. A substance present at the start of a reaction. 2. A substance formed during a chemical reaction. 3. A substance with a pH below 7. 4. A soluble base with a pH above 7. 5. A substance that changes colour with pH. 6. A reaction between an acid and a base. 7. A compound formed when an acid is neutralised. 8. Something with the potential to cause harm.	1. 🧪 2. ✨ 3. 🍋 4. 🧶 5. 🌈 6. ⚖️ 7. 🧂 8. ⚠️
Forces and Speed	1. Force 2. Newton 3. Resultant force 4. Balanced 5. Unbalanced 6. Speed 7. Distance-time graph 8. Weight	1. A push or pull that can change motion or shape. 2. The unit used to measure force. 3. The overall force after forces are combined. 4. Describes forces equal in size and opposite in direction. 5. Describes forces that produce a non-zero resultant. 6. The distance travelled per unit of time. 7. A graph showing how distance changes with time. 8. The force caused by gravity acting on a mass.	1. 👉 2. 🪝 3. ➕ 4. ⚖️ 5. 🚀 6. 🚗 7. 📉 8. 🌎
Ecosystems	1. Ecosystem 2. Producer 3. Consumer 4. Predator 5. Prey 6. Population 7. Germination 8. Sampling	1. A community of organisms and its physical environment. 2. An organism that makes its own food. 3. An organism that gains energy by eating others. 4. An animal that hunts and eats other animals. 5. An animal hunted and eaten by another animal. 6. All organisms of one species in an area. 7. The start of growth from a seed. 8. Studying part of a habitat to estimate the whole.	1. 🌳 2. 🌿 3. 🐇 4. 🦊 5. 🐭 6. 👥 7. 🌱 8. 🟩

Science Y7 – **Key Vocabulary**

Topic	Key tier 2 and 3 vocabulary	Definition	Dual coding
Geology and Astronomy	1. Crust 2. Mantle 3. Core 4. Rock cycle 5. Weathering 6. Orbit 7. Solar system 8. Satellite	1. The thin, solid outer layer of Earth. 2. The thick layer beneath Earth's crust. 3. The central region of Earth. 4. Processes that continually form and change rocks. 5. The breakdown of rock at Earth's surface. 6. The curved path of one object around another. 7. The Sun and objects held in orbit around it. 8. An object that moves in orbit around another object.	

Sir John Talbot's school

Science

What is my Learning Journey for Year 8?

Marches Academy Trust

We have derived our curriculum from the AQA Activate Scheme of Learning

Key Skills:

- Recall and retention of scientific facts
- Using key scientific terminology
- Calculations and equations
- Graph skills
- Analysing and interpreting data
- Evaluating information
- Using models

Assessments:

- Knowledge checks per topic
- Assessments every double topic
- 6-mark BUG questions per term
- Weekly Educake quizzes
- End of year assessment

#realworldready

- Understand our solar system and what we are planning to do
- Appreciate the changes that have happened for humans to evolve to where we are now and why we are so similar to other family members.
- Find out how we can make changes to save energy and what affect this has for the whole world.
- Predict how chemicals will react.
- Find out what causes friction and how we can improve it.
- Understand what our body needs to function and how our body uses food as fuel.

Useful websites and support

- KS3 Bitesize
-Oak Academy KS3 science
-Educake (login provided)

Home Learning

- Weekly Educake quizzes
- Revision for knowledge checks and assessments
- Enrichment projects over term breaks

Year 9

Waves

Sound, waves, frequency, light, how light interacts with matter, the eye, colour, and how we hear . **Big question: Why do objects have colours?**

Bioenergetics and Plant Transport

Aerobic and anaerobic respiration, Biotechnology, Photosynthesis, Leaves and plant minerals.
Big question: How do plants produce food?

Forces

Frictions and drag, Turning forces, Pressure in gases and liquids, and stress on solids. **Big questions: Why do you slide so much on ice?**

Chemical Reactions

Chemical reactions, combustion, Thermal decomposition, Conservation of mass, Exo and Endothermic, Energy levels and bond energies.
Big question: What happens in a chemical reaction?

Evolution

Natural selection, Charles Darwin, Extinction, DNA, Genetics.
Big question: Why do family members look similar?

Elements and the Periodic Table

Elements, atoms, compounds, polymers, and the periodic table.
Big question: Can we predict the properties of materials?

Magnetism

Magnets and magnetic fields, Electromagnets and their use.
Big question: How can you make a magnet strong enough to lift a car?

Energy Transfers

Energy transfer, Energy and temperature, work done and machines, radiation and insulation.
Big question: How can we save energy?

Organ Systems

Structure of lungs, effect of exercise, smoking, food and food tests, digestive system, diet, and enzymes.
Big question: How do we get energy from food?

Year 8 Curriculum Overview- Science

Content Topic/unit name, enquiry question	**Disciplinary Knowledge (Skills)** Actions taken within a topic to gain substantive knowledge	**Substantive Knowledge** This is the specific, factual content for a topic, which is connected into a careful sequence of learning	**Prior Learning (KS2)**	**Future learning (KS3)**
Organ Systems	Follow a method and make accurate observations to explain the results of a food test to see if they contain proteins, starch, sugars, and fats.	Gas exchange Breathing Smoking Nutrients Food tests Unhealthy diet Enzymes in digestion	Organ systems Recognise the impact of diet, exercise, drugs and lifestyle on the way the body functions Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function Describe the simple functions of the basic parts of the digestive system in humans	Respiration in the B4 unit at KS4
Energy Transfers	Use models such as representational, spatial, descriptive to make predictions and to develop scientific explanations and understanding of unfamiliar knowledge Make observations of demonstrations using new equipment such as an oscilloscope. Follow a method accurately to determine a conclusion from reflection and refraction.	Work Energy Machines Energy and temperature Energy Transfer Radiation and insulation	Types of energy (from year 8) Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) (KS2)	Energy stores and systems Conservation and dissipation of energy Efficiency National and global energy resources In P1a unit at KS4
Magnetism	Create simple circuits following a method and circuit symbols learnt in class. Make observations of simple circuits and make predictions on whether a circuit will light up or not.	Magnets and magnetic fields Electromagnets and their uses	Observe how magnets attract or repel each other and attract some materials and not others and describe magnets as having two poles. Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials	KS4 P7 uses magnets and compasses to find the direction of a magnetic field and making more complex electromagnets and experimenting how to make them stronger.

Year 8 Curriculum Overview- Science

Content Topic/unit name, enquiry question	**Disciplinary Knowledge (Skills)** Actions taken within a topic to gain substantive knowledge	**Substantive Knowledge** This is the specific, factual content for a topic, which is connected into a careful sequence of learning	**Prior Learning (KS2)**	**Future learning (KS3)**
Elements and the Periodic Table	Follow a method and make accurate observations to explain the results plotting results in a graph and concluding a relationship.	Elements, atoms, compounds, chemical formulae, polymers, the periodic table	Describe what an atom is Describe the difference between elements, mixtures, and compounds	KS4 learning about the same content in more detail looking at and predicting patterns in a periodic table and balancing equations
Chemical Reactions	Follow a method safely to combine acids and alkalis using various other chemical solutions to observe outcomes, record results and make conclusions.	Atoms in chemical reactions Combustion Thermal decomposition Conservation of mass Exo and endothermic reaction	Describe characteristics of a chemical reaction Word equations	C5 in KS4 learning about exo and endothermic reactions reactions and writing equations, and C3 looking at conservation of mass and chemical equations
Evolution	Use models such as representational, spatial, descriptive to make predictions and to develop scientific explanations and understanding of unfamiliar knowledge	Natural selection Charles Darwin Extinction Biodiversity History of DNA Inheritance Genetic modification	Natural selection covered in prior lesson, Darwin mentioned in Y6/Y7 schemes Food chains/webs and interdependence. How fossils are formed, what fossils are. Inheritance Structure of a cell (nucleus and DNA) as well as inheritance.	B4 at KS4 looking at Inheritance, variation and evolution.

Year 8 Curriculum Overview- Sciene

Content Topic/unit name, enquiry question	**Disciplinary Knowledge (Skills)** Actions taken within a topic to gain substantive knowledge	**Substantive Knowledge** This is the specific, factual content for a topic, which is connected into a careful sequence of learning	**Prior Learning (KS2)**	**Future learning (KS3)**
Forces	Follow a method to safely complete experiments, - record observations, and plotting results demonstrating forces using equipment such as newton meters, stop watched and rulers.	Friction and Drag Squashing and stretching Turning Pressure in gases Pressure in solids	Types of forces Forces make things move How to draw graphs Gravity pulls us down	Learning what a vector and a scalar and then applying them to different scenarios. The addition of vectors. Calculating moments.
Bioenergetics and Plant Transport	Using equipment to measure respiratory rate and heart rate, using chemicals to test for the presence of different substances, measuring rate of water loss over an extended period	Aerobic and Anaerobic respiration in yeast and animals Structure of a leaf and function of plant tissues Transpiration and movement of water in a plant	Plants need water, light, air, nutrients, and space to grow Roots absorb water and minerals from the soil Plants use energy from the sun to make food	B4 and B2 unit in KS4 relates directly to this topic in more depth.
Waves	Use models such as representational, spatial, descriptive to make predictions and to develop scientific explanations and understanding of unfamiliar knowledge Make observations of different devices to draw conclusions of how light travels on the EM spectrum.	Sound waves, water waves and energy Radiation and energy Modelling waves	Use models such as representational, spatial, descriptive to make predictions and to develop scientific explanations and understanding of unfamiliar knowledge on sound waves Interpret observations to draw conclusions for amplitude and frequency using an oscilloscope Follow a method to accurately record results and make comments on the observations of reflection and refraction	P6 KS4 looking at the electromagnetic spectrum of light, sound waves, and how light interacts with matter.

Science Y8 – Key Vocabulary

Topic	Key tier 2 and 3 vocabulary	Definition	Dual coding
Organ Systems	1. Alveolus 2. Ventilation 3. Diaphragm 4. Nutrient 5. Enzyme 6. Digestion 7. Absorption 8. Reagent	1. A tiny air sac where gas exchange occurs. 2. The movement of air into and out of the lungs. 3. A muscle beneath the lungs used in breathing. 4. A substance needed for growth, repair and energy. 5. A biological catalyst that speeds up reactions. 6. The breakdown of large food molecules into smaller ones. 7. The movement of digested nutrients into the blood. 8. A chemical used to test for another substance.	1. 2. 3. 4. 5. 6. 7. 8.
Energy Transfers	1. Work done 2. Conduction 3. Convection 4. Radiation 5. Insulator 6. Temperature 7. Thermal equilibrium 8. Dissipation	1. Energy transferred when a force moves an object. 2. Energy transfer through collisions between particles. 3. Energy transfer by the movement of a fluid. 4. Energy transfer by electromagnetic waves. 5. A material that reduces energy transfer. 6. A measure related to the average kinetic energy of particles. 7. When objects reach the same temperature. 8. The spreading of energy into less useful stores.	1. 2. 3. 4. 5. 6. 7. 8.
Magnetism	1. Magnetic field 2. Field line 3. North pole 4. South pole 5. Attract 6. Repel 7. Solenoid 8. Electromagnet	1. A region where a magnetic material experiences a force. 2. A line showing the direction and shape of a field. 3. The end of a magnet that points north when free. 4. The opposite end of a magnet from the north pole. 5. To pull objects towards each other. 6. To push objects away from each other. 7. A coil of wire that produces a magnetic field. 8. A magnet produced by current flowing through a coil.	1. 2. 3. 4. 5. 6. 7. 8.

Science Y8 – Key Vocabulary

Topic	Key tier 2 and 3 vocabulary	Definition	Dual coding
Elements and the Periodic Table	1. Atom 2. Element 3. Compound 4. Mixture 5. Chemical formula 6. Polymer 7. Periodic table 8. Group	1. The smallest particle of an element. 2. A substance made from only one type of atom. 3. Two or more elements chemically bonded together. 4. Substances together but not chemically bonded. 5. Symbols showing the elements and atom numbers in a substance. 6. A large molecule made from repeating smaller units. 7. An arrangement of elements based on atomic structure. 8. A vertical column of elements with similar properties.	1. 2. 3. 4. 5. 6. 7. 8.
Chemical Reactions	1. Chemical equation 2. Combustion 3. Oxidation 4. Thermal decomposition 5. Conservation of mass 6. Exothermic 7. Endothermic 8. Precipitate	1. A representation of reactants changing into products. 2. A reaction in which a substance burns in oxygen. 3. A reaction in which a substance gains oxygen. 4. Breaking down a compound by heating it. 5. The total mass stays constant in a closed system. 6. Describes a reaction that transfers energy to surroundings. 7. Describes a reaction that takes energy from surroundings. 8. An insoluble solid formed from solutions.	1. 2. 3. 4. 5. 6. 7. 8.
Evolution	1. Natural selection 2. Competition 3. Selection pressure 4. Extinction 5. Biodiversity 6. DNA 7. Gene 8. Genetic modification	1. A process in which advantageous features become more common. 2. The struggle between organisms for limited resources. 3. An environmental factor affecting survival and reproduction. 4. The permanent loss of every member of a species. 5. The variety of living organisms in an area. 6. The molecule that carries genetic information. 7. A section of DNA that influences a characteristic. 8. Changing an organism's DNA to give a chosen feature.	1. 2. 3. 4. 5. 6. 7. 8.

Science Y8 – Key Vocabulary

Topic	Key tier 2 and 3 vocabulary	Definition	Dual coding
Forces	1. Friction 2. Drag 3. Elastic deformation 4. Moment 5. Pivot 6. Pressure 7. Compression 8. Extension	1. A force opposing movement between surfaces. 2. A resistive force caused by moving through a fluid. 3. A change of shape that is reversed when force is removed. 4. The turning effect of a force. 5. The point around which an object turns. 6. Force acting per unit area. 7. A force that squashes or shortens an object. 8. The increase in length of a stretched object.	1. 🧤 2. 🪂 3. 🌀 4. 🔧 5. 📍 6. ⏬ 7. 🗜️ 8. ↔️
Bioenergetics and Plant Transport	1. Aerobic respiration 2. Anaerobic respiration 3. Glucose 4. Photosynthesis 5. Chlorophyll 6. Xylem 7. Transpiration 8. Stomata	1. Respiration using oxygen to release energy. 2. Respiration without oxygen, releasing less energy. 3. A simple sugar used in respiration. 4. The process plants use to make glucose using light. 5. The green pigment that absorbs light energy. 6. Plant tissue transporting water and mineral ions upwards. 7. The loss of water vapour from plant leaves. 8. Pores controlling gas exchange and water loss in leaves.	1. 🫁 2. 📦 3. 🍬 4. 😊 5. 🍃 6. 🪵 7. 💦 8. 🧱
Waves	1. Wave 2. Amplitude 3. Frequency 4. Wavelength 5. Reflection 6. Refraction 7. Oscilloscope 8. Electromagnetic spectrum	1. A disturbance that transfers energy without transferring matter overall. 2. The maximum displacement from the resting position. 3. The number of waves passing a point each second. 4. The distance between equivalent points on adjacent waves. 5. A wave bouncing from a surface. 6. A change in wave direction caused by a speed change. 7. A device that displays an electrical signal as a wave. 8. The complete range of electromagnetic waves.	1. 〰️ 2. ↕️ 3. ⏱️ 4. ↔️ 5. 🪞 6. 🥄 7. 📺 8. 🌈

Biology Key Stage 4 Overview

What is my Learning Journey for Year 9, 10 and 11?

Sir John Talbot's school

Marches Academy Trust

Scan me to get to our specification!

Our students complete the AQA Combined Science Trilogy specification unless Separate Science is chosen as an option in Year 9.

Exams:
Combined Science:
6 x 75-minute 70-mark papers – 2 for biology, 2 for chemistry, 2 for physics

Assessments:
-End of unit tests
- Weekly Educake quizzes
-6-mark BUG questions

#realworldready

- Appreciate how scientific understanding can lead to the development of cures and treatments for diseases to save live
- Understand how to minimise our impact on the organisms in the world around us
- Consider whether just because science allows us to manipulate organisms, should we be allowed to?
- Understand the importance of science to a wide variety of careers.

Useful websites and support
-GCSE bitesize
-GCSEpod
-Oak Academy
-Educake
-Savemyexams
-Physics and maths tutor

Key Skills:

- Recall and retention of scientific facts
- Analysing and interpreting data
- Evaluating information

YEAR 9

B1a Cells

Content – Cells, specialised cells, microscopy and diffusion.

B2a Organisation

Content – Levels of organisation, food, digestion, enzymes,

B4 Bioenergetics and plants

Content – Photosynthesis, rates of photosynthesis, aerobic and anaerobic respiration, responses to exercise and metabolism, plant organs and transport

YEAR 10

B3 Infection and response

Content – Pathogens and diseases, human defences and the immune response, vaccination, antibiotics, drug discovery and development.

B2b Organisation

Content –Enzymes, heart & blood, non-communicable diseases including heart disease & cancer

B1b Cells

Content – Cell division, stem cells and transport in cells

YEAR 11

B5 Homeostasis and Response

Content – Homeostasis, nervous system, hormonal coordination, blood glucose control, menstrual cycle, infertility and contraception

B7 Ecology

Content – Interdependence, adaptation, ecosystems, recycling materials, biodiversity and human impacts.

B6 Inheritance, variation and evolution

Content – Reproduction, DNA, inheritance, inherited disorders, variation, evolution, selective breeding, genetic engineering, fossils, extinction & classification

Home Learning

- Weekly Educake quizzes
- BUG question 6-markers
- Home learning booklets
- Revision for end of topic exams and mock papers

Chemistry Key Stage 4 Overview

What is my Learning Journey for Year 9, 10 and 11?

Sir John Talbot's school

Marches Academy Trust

Our students complete the AQA Combined Science Trilogy specification unless Separate Science is chosen as an option in Year 9.

Exams:
Combined Science:
6 x 75-minute 70-mark papers – 2 for biology, 2 for chemistry, 2 for physics

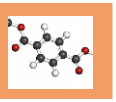
Assessments:
-End of unit tests
- Weekly Educake quizzes
-6-mark BUG questions

Scan this QR code to take you to the specification we study.

YEAR 11

C7 Organic Chemistry

Content – crude oil and alkanes, fractional distillation, properties of hydrocarbons, cracking, alkenes.



C10 Using resources

Content – sustainability, potable water, waste-water treatment, alternative methods of metal extraction, life cycle assessment and recycling.



C6b Rates

Content – reversible reactions, effect of changing conditions on equilibrium.



C9 Chemistry of the atmosphere

Content – Composition and evolution of the atmosphere, greenhouse gases, climate change, atmospheric pollutants and their sources..



#realworldready

- Appreciate how scientific understanding can result in developments in industries such as agriculture, manufacturing (e.g. of perfumes and detergents) and forensic and analytical science.
- Use scientific knowledge to understand steps we can take to reduce negative impact on our environment.
- Understand the importance of science to a wide variety of careers.

Useful websites and support
-GCSE bitesize
-GCSEpod
-Oak Academy
-Educake
-Savemyexams
-Physics and maths tutor

YEAR 10

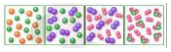
C2 Structure & bonding

Content – ionic, covalent and metallic bonding, states of matter, properties of ionic compounds, simple molecules, giant covalent structures, metals and alloys, allotropes of carbon.



C4 Chemical changes

Content – Reactivity of metals, reactions of acids, making salts, electrolysis of molten compounds and aqueous solutions.



C3 Quantitative chemistry

Content – conservation of mass, chemical equations, amount of substance, limiting reactants, concentration of solutions.



C1 Atomic Structure + C8 Chemical Analysis

Content – Atoms, ions and isotopes, models of the atom, development of the periodic table, trends in the modern periodic table, separating mixtures + Purity, formulations, chromatography, identification of common gases.



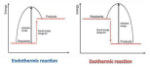
C6a Rates of reaction

Content – calculating rates, factors affecting rates of reaction, collision theory



C5 Energy changes

Content – endothermic and exothermic reactions, reaction profiles, energy change of reactions.



YEAR 9

Home Learning

- Weekly Educake quizzes
- BUG question 6-markers
- Home learning booklets
- Revision for end of topic exams and mock papers

Physics Key Stage 4 Overview

What is my Learning Journey for Year 9, 10 and 11?

Sir John Talbot's school

Marches Academy Trust

Our students complete the AQA Combined Science Trilogy specification unless Separate Science is chosen as an option in Year 9.

Exams:
Combined Science:
6 x 75-minute 70-mark papers – 2 for biology, 2 for chemistry, 2 for physics.

Assessments:
-End of unit tests
- Weekly Educake quizzes
-6-mark BUG questions

#realworldready
- Appreciate how scientific understanding of Physics can explain everyday occurrences, and those that are out of this world.
- Understand how to minimise our impact on the Earth through our energy choices.
- Learn that we don't know everything yet and there are lots of unanswered questions.
- Understand the importance of science to a wide variety of careers.

Scan me to get to our specification!

YEAR 11

P6 Waves

Content – Wave properties, reflection and reflection, sound waves, EM spectrum, and contraception, waves in medicine, UV, X-Rays, Infra red radiation.

P5 Forces

Content – vectors, scalars, resultant forces, moments centre of mass, parallelogram of forces, resolving forces, motion graphs, momentum, car safety, pressure, upthrust

Content –Calculating energy & power, calculating specific heat capacity. Conduction, convection, radiation

P4 Atomic Structure

Content – Resistance, current, potential difference, calculations, plug sockets, current, charge

Content – Atoms, the discovery of the nucleus, types of radiation, nuclear fission and fusion.

YEAR 10

P1b Energy

P2 Electricity

P3b Particle model of matter

P7 Magnetism

Content – Magnetic fields, electromagnets, electric motors, generators, transformers, microphones and speakers.

Content - specific latent heat, specific heat capacity, gas, pressure, and temperature

Key Skills:
- Recall and retention of scientific facts
- Using and rearranging formulae

Useful websites and support
-GCSE bitesize
-GCSEpod
-Oak Academy
-Educake
-Savemyexams
-Physics and maths tutor

YEAR 9

P3a Particle model of matter

Content – Density, states of matter, Internal energy.

P1a Energy

Content – Types pf energy, stores of energy, energy transfers, energy resources.

Home Learning

- Weekly Educake quizzes
- BUG question 6-markers
- Home learning booklets
- Revision for end of topic exams and mock papers

Year 9 Curriculum Overview- Science

Content Topic/unit name, enquiry question	**Disciplinary Knowledge (Skills)** Actions taken within a topic to gain substantive knowledge	**Substantive Knowledge** This is the specific, factual content for a topic, which is connected into a careful sequence of learning	**Prior Learning (KS2)**	**Future learning (KS3)**
B1a Cells	Using light microscopes to observe draw and label a selection if plant and animal cells	Eukaryotes and Prokaryotes Animal and plant cells Cell specialization Cell differentiation Microscopy Culturing microorganisms Transport in cells	KS3 Organisms microscopes, Plant and animal cells Respiration Photosynthesis Specialised cells Movement of substances	KS5 A level Biology, Module 2: Foundations in biology – cell structure
P1a Energy	Make and record observation in a series of experiments using different types of energies as they transfer from one to another Explain everyday and technological applications of science; evaluate associated personal, social, economic and environmental implications	Energy stores and systems Conservation and dissipation of energy Efficiency National and global energy resources	KS3 Energy Work Energy Machines Energy and temperature Energy Transfer Radiation and insulation	.KS5 A level Physics, module 3: Forces and motion
C5 Energy changes	Investigate the variables that affect temperature changes in reacting solutions.	Exo and endothermic reactions including reaction profiles and the energy change of reactions.	KS3 Reactions Atoms in chemical reactions Combustion Thermal decomposition Conservation of mass Exo and endothermic reaction	KS5 A level Chemistry, module 3: Periodic table and Energy
P3a Particle model of matter	Use appropriate equipment to make and record measurements needed to determine the dimensions of regular and irregular shapes Use SI units and prefixes	Density of material Changes of state Internal energy	KS3 Matter The particle model States of matter Changing state Diffusion Gas pressure Inside particles	KS5 A level Physics, module 5 Newtonian world and astrophysics

Year 9 Curriculum Overview- Science

Content Topic/unit name, enquiry question	**Disciplinary Knowledge (Skills)** Actions taken within a topic to gain substantive knowledge	**Substantive Knowledge** This is the specific, factual content for a topic, which is connected into a careful sequence of learning	**Prior Learning (KS2)**	**Future learning (KS3)**
B2a Organisation	Use qualitative reagents to test for a range of carbohydrates, lipids, and proteins including Benedicts solution, iodine and Biuret	Principles of organisation Human digestion system	KS3 Organisms Enzymes in digestion Unhealthy diet KS2 Describe the simple functions of the basic parts of the digestive system in humans	KS5 A level Module 4 Biodiversity, Evolution, and Disease
C6a Rates of reaction	Develop a hypothesis then investigate how change sin concentration affect the rates of reactions by a method involving turbidity and a volume of gas produced Interpret observations Presenting observations and data appropriately	Rate of reaction Factors which affect the rate of reactions Collision theory and activation energy Catalysts	KS3 Reactions Atoms in chemical reactions Conservation of mass Exo and endothermic reactions Chemical reactions Chemical reactions of metals and acids	KS5 A level Chemistry, module 3: Periodic table and energy
P7a Electromagnets	Using magnets and a compass observe and draw the magnet fields lines around a magnet Using a bar magnet and iron fillings to explain how magnets and magnetic fields interact between 2 magnets Follow a method and record results for how many paper clips can be picked up using a solenoid and then an electromagnet. Evaluate methods and suggest possible improvements	Poles of a magnet Magnetic fields The motor effect	KS3 Electromagnets Creating basic circuits with circuit symbols. Creating basic electromagnets.	KS5 A level Physics module 6: Particles and medical physics

Year 9 Curriculum Overview- Science

Content Topic/unit name, enquiry question	**Disciplinary Knowledge (Skills)** Actions taken within a topic to gain substantive knowledge	**Substantive Knowledge** This is the specific, factual content for a topic, which is connected into a careful sequence of learning	**Prior Learning (KS2)**	**Future learning (KS3)**
B4 Bioenergetics	The effect of light intensity on the rate of photosynthesis.	Photosynthesis Respiration	KS3 Organisms Levels of organization Skeletons, joints and muscles, microscopes, Plant and animal cells Respiration Photosynthesis Specialised cells Movement of substances	KS5 A level biology Module 5: Communication, homeostasis, and energy
C1 Atomic Structure	The need and importance of peer review on scientific theories.	Simple model of the atom, symbols, relative atomic mass, electronic charge and isotopes. The periodic table.	KS3 Matter Elements, atoms, compounds, chemical formulae, polymers, the periodic table	KS5 A level Chemistry, module 2: Foundations in Chemistry

Science Y9 – **Key Vocabulary**

Topic	Key tier 2 and 3 vocabulary	Definition	Dual coding
B1a Cells	1. Eukaryote 2. Prokaryote 3. Organelle 4. Differentiation 5. Magnification 6. Resolution 7. Osmosis 8. Active transport	1. An organism whose cells contain a nucleus. 2. A single-celled organism without a nucleus. 3. A specialised structure inside a cell. 4. The process by which a cell becomes specialised. 5. How many times larger an image is than the object. 6. The ability to distinguish two close points as separate. 7. The net movement of water through a partially permeable membrane. 8. Movement against a concentration gradient using energy.	1. 🏛️ 2. 🦠 3. ⚙️ 4. 🧬 5. 🔎 6. 👓 7. 💧 8. ⬆️
P1a Energy	1. System 2. Kinetic energy 3. Gravitational potential energy 4. Elastic potential energy 5. Specific heat capacity 6. Conservation of energy 7. Useful output 8. National grid	1. An object or group of objects being studied. 2. Energy stored by a moving object. 3. Energy stored due to position in a gravitational field. 4. Energy stored when an object is stretched or compressed. 5. Energy needed to raise 1 kg of a substance by 1°C. 6. Energy cannot be created or destroyed. 7. Energy transferred in the intended way. 8. The network transferring electricity from producers to users.	1. 📦 2. 🏃 3. ⛰️ 4. 🤸 5. 🌡️ 6. ♻️ 7. 🎯 8. 🔦
C5 Energy Changes	1. Reaction profile 2. Activation energy 3. Bond breaking 4. Bond formation 5. Energy change 6. Surroundings 7. Temperature change 8. Calorimetry	1. A graph showing energy changes during a reaction. 2. The minimum energy needed for particles to react. 3. A process that requires energy. 4. A process that releases energy. 5. The difference between energy supplied and released. 6. Everything outside the reacting chemicals. 7. A measured rise or fall in temperature during a reaction. 8. Measuring energy changes using temperature data.	1. 🏔️ 2. 🚧 3. ✂️ 4. 🔗 5. ⚖️ 6. 🌍 7. 🌡️ 8. 🟤

Science Y9 – **Key Vocabulary**

Topic	Key tier 2 and 3 vocabulary	Definition	Dual coding
P3a Particle Model of Matter	1. Density 2. Mass 3. Volume 4. Internal energy 5. Specific latent heat 6. Physical change 7. Regular object 8. Displacement	1. Mass per unit volume. 2. The amount of matter in an object. 3. The space occupied by an object or substance. 4. The total kinetic and potential energy of particles. 5. Energy needed to change the state of 1 kg without temperature change. 6. A reversible change that forms no new substance. 7. An object whose volume can be calculated from dimensions. 8. A method for finding volume by measuring moved liquid.	1.  2.  3.  4.  5.  6.  7.  8.
B2a Organisation	1. Hierarchy 2. Digestive system 3. Catalyst 4. Carbohydrase 5. Protease 6. Lipase 7. Bile 8. Emulsification	1. An ordered arrangement from cells to organ systems. 2. Organs that break down food and absorb nutrients. 3. A substance that increases reaction rate without being used up. 4. An enzyme that breaks carbohydrates into sugars. 5. An enzyme that breaks proteins into amino acids. 6. An enzyme that breaks lipids into fatty acids and glycerol. 7. An alkaline fluid that neutralises stomach acid and emulsifies fats. 8. Breaking fat into small droplets to increase surface area.	1.  2.  3.  4.  5.  6.  7.  8. 
C6a Rates of Reaction	1. Rate of reaction 2. Concentration 3. Surface area 4. Collision theory 5. Successful collision 6. Catalyst 7. Turbidity 8. Gradient	1. The amount of reactant used or product formed per unit time. 2. The amount of a substance in a given volume. 3. The total exposed area of a solid. 4. Reactions occur when particles collide with enough energy. 5. A collision that results in a chemical reaction. 6. A substance that increases rate without being used up. 7. Cloudiness used to judge formation of a precipitate. 8. The slope of a graph, used to calculate rate.	1.  2.  3.  4.  5.  6.  7. 8. 

Science Y9 – **Key Vocabulary**

Topic	Key tier 2 and 3 vocabulary	Definition	Dual coding
P7a Electromagnets	1. Permanent magnet 2. Induced magnet 3. Magnetic flux density 4. Motor effect 5. Conductor 6. Solenoid 7. Field direction 8. Force direction	1. A material that produces its own magnetic field. 2. A material that becomes magnetic inside a magnetic field. 3. A measure of the strength of a magnetic field. 4. A force on a current-carrying wire in a magnetic field. 5. A material through which electric charge can flow. 6. A current-carrying coil that produces a magnetic field. 7. The direction a north pole would move in a field. 8. The direction found using Fleming's left-hand rule.	1. 🧲 2. 📎 3. 📶 4. ⚙️ 5. 🔌 6. 🌀 7. 🧭 8. ✋
B4 Bioenergetics	1. Limiting factor 2. Light intensity 3. Chloroplast 4. Oxygen debt 5. Lactic acid 6. Metabolism 7. Starch 8. Rate	1. A factor that restricts the rate of a process. 2. The amount of light reaching a given area. 3. The organelle where photosynthesis takes place. 4. Extra oxygen needed after exercise to remove lactic acid. 5. A product formed during anaerobic respiration in muscles. 6. The sum of all chemical reactions in a cell or body. 7. An insoluble carbohydrate used by plants for storage. 8. How quickly a change occurs.	1. 🚦 2. 🔦 3. 🟢 4. 🫁 5. 🧪 6. ♻️ 7. 🌾 8. ⏱️
C1 Atomic Structure	1. Proton 2. Neutron 3. Electron 4. Isotope 5. Atomic number 6. Mass number 7. Electronic structure 8. Relative atomic mass	1. A positively charged particle in the nucleus. 2. An uncharged particle in the nucleus. 3. A negatively charged particle in energy levels. 4. Atoms of an element with different numbers of neutrons. 5. The number of protons in an atom. 6. The total number of protons and neutrons. 7. The arrangement of electrons in energy levels. 8. The weighted mean mass of an element's atoms.	1. ➕ 2. ⚪ 3. ➖ 4. 🧩 5. 🔢 6. ⚖️ 7. 🪐 8. 📊

Chemistry Key Stage 5 Overview

What is my Learning Journey for Year 12 and 13?

Sir John Talbot's school

Marches Academy Trust

The exam board we use is OCR and the specification is H432 Chemistry A

Exams: 3 papers:
Periodic table, elements and physical chemistry–2h15mins
Synthesis and analytical techniques–2h15mins
Unified chemistry–1h30mins

Assessments:
-End of unit tests
-Recall quizzes to test recall
-Assessment of practical skills (PAGs)

Key Skills:
- Recall and retention of scientific facts
- Analysing and interpreting data
- Evaluating information

#realworldready
- Appreciate how scientific understanding can lead to developments in industry
- Apply chemistry knowledge to other subject areas to enhance understanding
- Develop practical skills
- Understand the importance of science to a wide variety of careers.

Useful websites and support
- Chemrevise
- Seneca
- Savemyexams
- Physics and maths tutor
- Free science lessons videos

A level exams

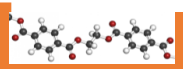
Mock exam

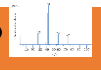
An additional unit is studied throughout the course and integrated into lessons; 'Development of practical skills in chemistry'.

YEAR 13

Content – aromatic compounds, carboxylic acids and esters, organic nitrogen compounds: amines and amino acids, polymerisation: addition polymers and condensation polymers, synthetic organic chemistry and further development of practical skills, the importance of modern analytical techniques in organic analysis.
Bigger Picture Focus – To expand knowledge of organic chemistry with particular focus on aromatic compounds and polymers and apply this knowledge to enhance understanding of synthetic and analytical techniques in chemistry.

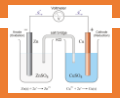
Organic chemistry and analysis





Physical Chemistry





Content – rate equations, orders of reaction, the rate-determining step, equilibrium constants, Kc and Kp, acid–base equilibria including pH, Ka and buffer solutions, lattice enthalpy and Born–Haber cycles, entropy and free energy, electrochemical cells, redox chemistry, transition elements.
Bigger Picture Focus – To further appreciate the impact of different factors on rates of reactions that are used in industry, develop mathematical skills in relation to rates of reaction and equilibrium constants, expand knowledge of the periodic table and understand the importance of buffers e.g. in the human body.

Periodic table and energy





Content – periodic and group properties, enthalpy changes and their determination, rates of reaction, reversible reactions and equilibrium, energy and yield in improving sustainability.
Bigger Picture Focus – To build on knowledge from the foundations in chemistry unit in order to understand the implications of energy use in industrial processes on sustainability.



YEAR 12

Content – atomic structure, quantitative chemistry: formulae, equations, amount of substance and the mole, reactions of acids, oxidation number and redox reactions, bonding and structure.
Bigger Picture Focus – To gain insight into the concepts that underpin chemistry by allowing understanding of properties and reactions. This understanding forms the foundations of developments in many industrial applications.

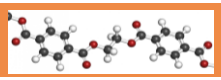




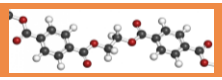
Foundations in Chemistry







Basic organic Chemistry



Content – nomenclature and formula representation, functional groups, organic reactions and isomerism, aliphatic hydrocarbons, alcohols and haloalkanes, organic practical skills and organic synthesis, instrumental analytical techniques.
Bigger Picture Focus – To grasp an understanding of organic chemistry and its important applications in everyday life, including current environmental concerns surrounding sustainability. We study the reactions and properties of carbon compounds and consider appropriate processing of plastic waste and preventing use of ozone depleting chemicals.

Home Learning

Up Learn
Past paper questions
Consolidation practice
Pre-reading tasks and quizzes

Biology Key Stage 5 Overview

What is my Learning Journey for Year 12 and 13?

Sir John Talbot's school

Marches Academy Trust

The exam board we use is OCR and the specification is H420 Biology A

Key Skills:

- Recall and retention of scientific facts
- Analysing and interpreting data
- Evaluating information

Exams: 3 papers:
Biological processes – 2h15mins
Biological diversity – 2h15mins
Unified biology – 1h30mins

Assessments:
-End of unit tests
-Recall quizzes to test recall
-Assessment of practical skills (PAGs)

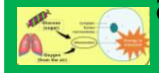
Content –Cellular control, Inheritance, manipulating genomes, cloning and biotechnology, ecosystems, populations and sustaintability
Bigger Picture Focus – The final module starts at a cellular and genetic level and then moves on to looking at new technologies at the cutting edge of medicine and science and current uses of biology in the real world. It ends by looking at ecosystems, human impacts on them and how this can be managed,

Content – Homeostasis, excretion, neuronal & hormonal communication, plant & animal responses, photosynthesis & respiration.
Bigger Picture Focus – This module includes lots of physiology (kidney & liver function, neurons), anatomy (structure of liver & kidneys) and then key responses to environment in plants & animals. It builds on biochemistry covered in unit 1 to look at photosynthesis & respiration.

Genetics, evolution and ecosystems







Communication, and energy hormones





YEAR 13

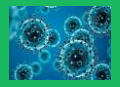
Mock exam



Biodiversity evolution and disease







An additional unit is studied throughout the course and integrated into lessons; 'Development of practical skills in biology'.

Content – Communicable diseases, biodiversity and classification and evolution.
Bigger Picture Focus – This module is split into two sections; one looks at pathogens and how our immune systems defends itself against them and other looks how we sample, calculate and maintain biodiversity which then links to classifying organisms and variation natural selections and evolution.

YEAR 12

Foundations in biology



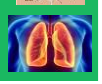




Exchange and transport







Content – Cell structure, biological molecules, nucleic acids (DNA replication & protein synthesis), enzymes, biological membranes and cell division, cell diversity and differentiation.
Bigger Picture Focus – To grasp how understanding organisms begins at a molecular and biochemical level leading on to understanding at an organelle and cellular level. These then are the foundations for understanding the complex life processes that occur within all organisms.

Content – Exchange surfaces and breathing, transport in animals and transport in plants.
Bigger Picture Focus – Having built up strong foundations of knowledge from the prior unit, this one looks to understand how organisms exchange substances with their environment and transport them around.

#realworldready

- Appreciate how scientific understanding can lead to the development of cures and treatments for diseases to save live
- Understand how to minimise our impact on the organisms in the world around us
- Consider whether just because science allows us to manipulate organisms, should we be allowed to?
- Understand the importance of science to a wide variety of careers.

Useful websites and support
- Seneca
- Savemyexams
- Physics and maths tutor
- UpLearn



Up Learn
Past paper questions
Consolidation practice
Pre-reading tasks and quizzes

Physics Key Stage 5 Overview

What is my Learning Journey for Year 12 and 13?

Sir John Talbot's school

Marches Academy Trust

The exam board we use is OCR and the specification is H556 Physics A

Exams:
-2 x 2 hr 15 minute papers – content learnt is split between the 2 papers.
-1x 1 hr 30 minute paper – all content learnt is examined

Assessments:
-End of unit tests
-Weekly quizzes
-Past paper questions
-Mock papers

#realworldready

- Appreciate how scientific understanding of Physics can explain everyday occurrences, and those that are out of this world.
- Understand how to minimise our impact on the Earth through our energy choices.
- Learn that we don't know everything yet and there are lots of unanswered questions.
- Understand the importance of science to a wide variety of careers and research that will one day shape the way we live our lives.

Useful websites and support
-MinutePhysics (YouTube)
-Veritasium (YouTube)
-UpLearn
-Seneca
-Savemyexams
-Physics and maths tutor

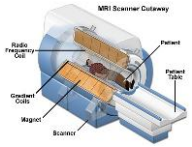
Key Skills:

- Recall and retention of scientific facts
- Analysing and interpreting data
- Evaluating information

Up Learn
Past paper questions
Consolidation practice
Pre-reading tasks and quizzes

YEAR 13

Particles and Medical Physics



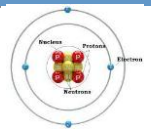
Content – Electricity and Magnetism
Bigger Picture Focus – To explore more components, and how we are able to manipulate electricity to create devices, making sure we know how they will act in the real world.

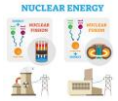


Content – Medical imaging
Bigger Picture Focus – To combine previous topics to understand how medical imaging works and make judgements based upon risks and benefits.



Content – Radioactivity and Nuclear Decay
Bigger Picture Focus – To understand where radioactivity comes, from how we create electricity from it, the future possibilities and the dangers.





AstroPhysics



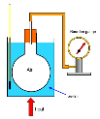
Content – Stars and cosmology
Bigger Picture Focus – To learn what we know and don't know about the universe, to explore the future of the universe, and where it all started from.



Newtonian world



Content – Thermal Physics, Motion in Space
Bigger Picture Focus – To understand the energy around us and how space was constructed, explaining many real-world phenomenon that we take for granted.



Electrons, Waves, Photons



Forces & Motion

Content – Motion, Forces, Energy, Materials, Moments
Bigger Picture Focus – To have a deeper understanding of how the world around us moved and interacts and explain those interactions mathematically and verbally.



Content – Electrical Circuits
Bigger Picture Focus – To explain the inner workings of devices using enhanced knowledge of circuits, components, and Laws.





Content – Waves & Quantum
Bigger Picture Focus – To learn of the parts of Physics that we are still exploring, starting with now we know matter interacts, to what we can't explain.

Content – Units, Vectors, and Skills
Bigger Picture Focus – To understand the vocabulary and range of skills needed for practical work in Physics.

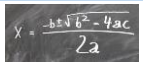
Foundations of Physics & Practical Skills













YEAR 12

