Curriculum Content Map — **Subject: Year 8 Science**

			Term 1				Term 2				Term 3		
Month			September	October	November	December	January	February	March	April	May	June	July
Cultural Transmission	Units of Work		*Unit 4 -waves* *Sound* *4 lessons* *Unit 4- Waves* *Light* *5 Lessons*	*Unit 4- waves* *Light* *5 Lessons* *Unit 10- Variation* *Variation* *3 Lessons*	Unit 10- Variation Variation 3 Lessons Unit 10- Variation Human reproduction 5 Lessons.	Unit 7 – Earth Earth Structure 4 lessons	*Unit 7- Earth* *Earth structure* *4 Lessons* *Unit 7- Earth* *The universe* *4 Lessons*	*Unit 2- electromagnets* *Current* *2 Lessons* *Unit 2- Electromagnets* *Potential difference and resistance* *3 Lessons*	Unit 8- Organisms Breathing 5 Lessons	Unit 8- Organisms Digestion 5 Lesson	*Unit 5- Matter* *Elements* *5 lessons*	*Unit 5- Matter* *Periodic table* *4 lessons*	Unit 13 Enquiry process Working Scientifically
	National Curriculum area – KS3		Page 66 Sound waves Page 66 Light waves	*Page 66* *Light waves* *Page 62* *Inheritance, chromosomes, DNA and genes*	Page 62 Inheritance, chromosomes, DNA and genes Page 60 and 61 Reproduction	Page 63 Earth and atmosphere Materials	Page 63 Earth and atmosphere Materials Page 67	*Page 66* *Current electricity* *Static electricity*	Page 60 Gas exchange systems	Page 60 Nutrition and digestion	Page 63 The periodic table Materials	*Page 63* *The periodic table*	Page 58 and 59. Working scientifically
	Substantive Knowledge	***The What!***	Unit 4- Waves Sound waves and speed Loudness and amplitude Frequency and pitch The ear and hearing Unit 4- Waves Light Reflection	Unit 4- Waves Refraction The eye and vision Colour Unit 10- Variation Variation Continuous and discontinuous	Unit 10- Variation Adapting to change Unit 10- Variation Adolescence Reproductive systems Fertilisation and implantation Development of a foetus	Unit 7 – Earth The structure of the earth Sedimentary rocks Igneous and metamorphic rocks	Unit 7 – Earth The rock cycle Ceramics Unit 7- Earth The night sky The solar system The earth	Unit 2- electromagnets Potential difference Resistance Series and parallel circuits Current Charging up	Gas exchange Breathing Drugs Alcohol Smoking	Nutrients Food tests Unhealthy diet Digestive system	Elements Atoms Compounds Chemical formulae Polymers	The periodic table The elements of group 1 The elements of group 7 The elements of group 0	More on planning how to answer a question More on analysing and evaluating Communication Evidence and sources Risks and benefits Review theories 1 and 2
	Disciplinary knowledge	***The How!***	Unit 4- Waves Students explain that sound travels at different speeds in different materials Students predict which material sound travels fastest in. students practice drawing wave diagrams using simple examples. Students to note the difference between high and low pitched sounds, and draw waveforms. Students complete the activity sheet identifying parts of the ear and ways the ear can be damaged. Unit 4- Waves Students check equipment by seeing how light levels vary in the room first. Test and rank different materials on a scale from transparent to opaque. Students draw and compare diagrams to explain a solar. For the main lesson activity, students investigate reflection by shining a torch onto different flat surfaces and observe the reflected light on a nearby white surface. Students predict and explain results.	Unit 4- Waves Students investigate refraction using a glass or Perspex block, changing the angle of incidence. Teacher to demonstrate what happens in the eye with short and long-sight using a model eye. Teacher to demonstrate how to correct the problems with convex and concave lenses. Students complete the ray diagrams on a worksheet. Students predict the colour of a red object in different coloured light and predict the colour of light through two coloured filters. They then test their predictions. Students then move on to testing colours of objects by shining different coloured lights onto them, against a black background. Unit 10- Variation Students record variation within different seagull species. Students list ways humans vary and categorise into continuous and discontinuous variation, suggesting possible causes.	Unit 10- Variation Students produce a time line of the changes that take place in deciduous trees throughout the year and how this is linked to seasonal changes Unit 10- Variation Students sort cards with statements about adolescence on according to changes that occur in girls and in boys. Students label diagrams of both reproductive systems, and fill in tables summarising structures and functions. Students use diagrams to carry out simple magnification calculations to deduce the actual size of egg and sperm cells. Students connect phrases together to sequence events that occur during sexual intercourse. Students sequence boxes containing events in the menstrual cycle in the correct order.	Unit 7 – Earth Students label a diagram of the Earth's structure, including a brief description of each layer, and assess each other's work. Students carry out simple experiments that model sedimentary rock formation processes. Using a short text on formation and crystal sizes of granite and basalt, students write a hypothesis on the relationship between crystal sizes in igneous rock and the temperature of the environment during formation. Students carry out a practical to mimic igneous rock formation using salol.	Unit 7 – Earth Students to work in small groups to identify a possible route around the rock cycle. Routes are discussed as a class. Students plan an investigation to compare the strength of different ceramic materials using the guidelines on the practical sheet. Students then record their observations in the results table provided. Unit 7- Earth Students rank objects in order of distance from Earth and matching distances in light-time. Students guess where the furthest man-made object has gone. Students make a moving model of Sun, Earth, and Moon in their books. Students add another planet, and use the model to explain why it seems to move forwards and backwards relative to Earth. Students should identify when the UK has winter and summer. students model the phases of the Moon using the instructions on the practical sheet and then answer questions. Students suggest whether planets, or the moons around other planets have phases.	Unit 8- Organisms Students draw a bar chart using data provided, and analyse results given to draw a valid conclusion. Students follow the instructions on the practical sheet to measure their lung volume and collate it against height, plotting data as a scatter graph. This is to investigate the claim that lung volume is linked to a person's height. Students carry out three simple tests on four chemicals and use the results to decide if any are illegal recreational drugs. For the main lesson activity, students carry out a short practical to find out their reaction times. These are compared with secondary data about the reaction times of people who have consumed alcohol. Students discuss possible effects of smoking on a foetus	Unit 8- Organisms Students use food labels to investigate the health value in cereals. Students carry out a circus activity in which they test for the presence of starch, lipids, sugar and proteins in the foods provided. Students follow instructions on the practical sheet to burn different types of food to heat water in a test tube. Students produce a simple labelled model of the digestive system using plastic tubing and a range of modelling materials. When complete, students pour coloured liquid through their model to show the movement of food through the digestive system.	Unit 8- Organisms Students carry out a practical to observe the action of carbohydrase on the breakdown of starch. Unit 5- Matter students suggest how chemists avoid confusion when writing about elements in different languages. Using a Periodic Table, students look at the different chemical symbols for various elements. Students write a story about an atom that gets separated from the other atoms in a sample of the element. Teacher demonstrates the reaction between iron and sulfur in a fume cupboard. Students carry out two short experiments and record all their observations in a table. Students build models for CO, CO2, CH4, and H2O with molecular modelling kits. Students interpret information on different polymers from a table in order to choose suitable polymers for different functions.	students suggest how chemists avoid confusion when writing about elements in different languages. Using a Periodic Table, students look at the different chemical symbols for various elements. Students write a story about an atom that gets separated from the other atoms in a sample of the element. Teacher demonstrates the reaction between iron and sulfur in a fume cupboard. Students carry out two short experiments and record all their observations in a table. Students build models for CO, CO2, CH4, and H2O with molecular modelling kits. Students interpret information on different polymers from a table in order to choose suitable polymers for different functions.	Students discuss the layout of the Periodic Table, including periodic trends. Teacher demonstrates alkali metals by the reactions of lithium, sodium, and potassium with water, while students record their observations in their results table. Students watch a demonstration/video the displacement of potassium halide solutions using chlorine, bromine, and iodine water. Students record observations and evaluate the hazards of Group 7 elements. Students plot a bar graph of the atomic masses of the noble gases. Students make predictions using the data given and answer questions	Students devise a scientific question with elastics bands, write out a plan for their investigation, collect data, and plot a graph. They then swap methods and repeat. Students plot a graph and draw a line of best fit using data from a real bungee cord. Students write an information sheet for the bungee cord, which includes a conclusion, the pattern in the data, and a section advising how to use the data and its limitations. Students produce two different pieces of writing about the experiments provided. For the main lesson activity, students use their data from the elastic band experiment to write a paper for a journal, using the internet to write a list of references. Students peer review each other's articles and decide if they should be published. students choose a news story and conduct a web investigation, tracing evidence back to the paper published in a scientific journal. They produce a critique of the claim, evidence and reasoning for the claim
	Sequencing (Flow)	***Retrieval & Extension***	Unit 4- Waves build from KS2 and KS3 Topic of light covered in year 6 and sound covered in year 4. Unit 4- Waves are further developed in Year 9 unit 12 and 13	Unit 4- Waves builds from KS2 and KS3 Topic of light covered in year 6 and sound covered in year 4. Year 7 unit 1 Unit 10- Variation builds from KS2 and KS3 Topic of living things and their habitats and the topic evolution and inheritance covered in year 6. Year 7 unit 10 Unit 4- Waves	Unit 10- Variation builds from KS2 and KS3 Topic of living things and their habitats and the topic evolution and inheritance covered in year 6. Year 7 unit 10 Unit 10- Variation builds from KS2 and KS3 Topic of living things and their habitats covered in year 5. Year 7 unit 11 Unit 10- Variation is further developed in Year 8 unit 4	Unit 7 – Earth builds from KS2 and KS3 Topic of rocks covered in year 3. Unit 7 – Earth is further developed in Year 9 unit 10 Year 9 unit 11	Earth Retrieval tasks will link to KS2 content on topic of rocks covered in year 3. Unit 7- Earth Links to KS2 content of topic of earth and space covered in year 5.		Unit 8- Organisms Retrieval tasks will link to KS2 content on topic of animals including humans covered in year 6. Retrieval tasks will link to year 7 unit 4 and 5.	Retrieval tasks will link to KS2 content on topic of animals including humans covered in year 6. Retrieval tasks will link to year 7 unit 4 and 5.			
	Summative Assessment				AP2				AP2 students will be tested on Unit 7 Earth Structure and the universe, Unit 2 Electromagnets and Potential difference.				
Personal Empowerment	Virtue	***The opportunity to reflect, think deeply and critically about an issue.***	Friendliness & Civility	Justice & Truthfulness	Courage	Generosity	Gratitude	Good Speech	Good Temper & Humour	Self-Mastery	Self-Mastery	Compassion	Good Sense
	Link to Virtue		Unit 4- Waves Students will need to be friendly and civil when they discuss hearing impairment in terms of the ear. Unit 4- Waves Students will need to be friendly and civil when they discuss eye conditions and correcting vision.	Unit 4- Waves Students will learn the science behind lenses and how they correct vision. They will think about whether it is just that some people need glasses and some don't. Unit 10- Variation Students will discuss justice and truthfulness when discussing variation and what causes variation within species	Unit 10- Variation Students to demonstrate courage and respect when comparing different types of variation and to appreciate why it is important to have a large variety of genes. Unit 10- Variation Students will need to demonstrate courage when learning about the reproductive systems in humans	Unit 7 – Earth Students will look at how the rock cycle teaches us to be generous as rocks are transformed from one type to the other which provides us with different useful rocks for different purposes.	Unit 7 – Earth Students will appreciate and be thankful for materials such as ceramics and appreciate how their different properties can be used for different purposes Unit 7- Earth Students will demonstrate gratitude when learning about how the sun and orbiting earth cause the different seasons of the year	Students will use good speech when working in groups to build different types of circuits. They will also use good speech when building different models to represent voltage, current and resistance	Students will use good temper when learning about the effects of alcohol, drugs and smoking in our bodies.	Students will use self-mastery when learning why a healthy diet is important for our body and how we can look after ourselves better	Students to aim high when learning of a new topic which they haven't learned at KS2.	Students to use speaking to compare in groups the properties of group 1 and 7 elements	Students will work in groups when carrying out various experiments to build and cement their disciplinary knowledge
Preparation for Work	Skill	***Transferable skills***	Listening	Leadership	Problem-Solving	Creativity	Staying Positive	Speaking	Staying Positive	Aiming High	Aiming High	Speaking	Teamwork
	Link to Skill		Unit 4- Waves Students will be learning about the ear and how it works to help us listen to each other. Unit 4- Waves Students to listen about how the eye works and be able to explain this to each other	Unit 4- Waves Students need leadership when using equipment to carry out reflection and refraction practicals Unit 10- Variation Students will show leadership skills when debating how different species are adapted to their specific surroundings.	Unit 10- Variation Students will use problem solving when solving how animals and plants can be adapted to change. Unit 10- Variation Students will use problem solving skills to determine which type of contraception should be used to prevent pregnancy.	Unit 7 – Earth Students will be creative when building a rock cycle model using everyday objects	Unit 7 – Earth Students will look at how we can use different materials and ceramics for different purposes and how we can keep positive knowing we have different materials to use Unit 7- Earth Students will be staying positive when considering how gravity allows all planets to be in the right place at the same time.	Students will practise speaking when explaining different models for voltage, current and resistance	Students will use staying positive when learning about how the lung is specialised to maximise oxygen intake.	Students will aim high when challenging themselves to improve their diets.	Students to self-master writing chemical formulae which students often struggle with	Students to focus on how as scientists we need to use compassion when new ideas and theories are developed such as the periodic table	Students will use good sense to deduct and predict outcomes of different investigations they will carry out in teams.
Preparation for Citizenship	SMSC & British Values	*Developing opinions on curent issues*	Students to demonstrate responsibility when using light rays not to hurt each other's eyes	Students to demonstrate respect when discussing variation and how we are all different.	Students to be respectful and tolerant when learning about sensitive topics such as sexual reproduction in humans and the menstrual cycle.	Students to demonstrate responsibility when carrying out experiments in group work.	Students to appreciate the rules of planets, the moon and the sun. Without these we wouldn't have seasons, night and daylight.		Students to be tolerant and respectful when speaking about the illegal use of drugs and the misuse of alcohol.	Students to be tolerant and respectful when discussing healthy and unhealthy diets and the impact they have on our body			
	Link to SMSC & British Values												