Year 7 Curriculum Overview: Science

RESPECT
COURAGE
RESPONSIBILITY
KINDNESS
RESILIENCE

	Topics/ content outline:	Powerful Knowledge (key concepts, skills)	What will you be assessed on?	How can you help at home?
Autumn Term	1. Becoming a Scientist 2. Matter 3. Forces 4. Intro to Biology (start)	The KS3 science curriculum starts with topics that cover the powerful knowledge that students will need to succeed in science. The autumn term begins with an overview of what it means to be a scientist, the scientific method and learning key science skills such as graph drawing and experimental skills. After this students will study the composition of matter and how an understanding of what is happening on the smallest of scales in terms of particles can be used to describe and predict behaviour on a larger scale. Finally, students will study forces and their effects. They will learn about contact & non-contact forces, what forces can do as well as how to calculate resultant forces on objects and fields.	**Students first summative test will take place at the end of the term, and results reported home. It will cover material up to the first half of topic 4.**	**Asking students about what they have been doing in science and having them explain it to you. It is a large step up from primary to secondary in terms of depth of knowledge and equipment available and getting students to verbalise what they are learning on a regular basis will help to secure the key knowledge required.**
Spring Term	4. Intro to Biology (finish) 5. Chemical Reactions 6. Energy 7. Cells, Respiration & Diffusion	The powerful science knowledge continues into the spring term. Students start the term with an introduction to biology. This topic gives an outline of what biology is along with scientific and revision skills (converting between different scales, writing extended answers, using mind maps and flash cards for revision and retention. Students move onto chemical reactions where they will study the differences between chemical reactions and physical changes, types of reactions, conservation of mass and catalysts. Next is energy where students will learn what energy is and what it does, the language around talking about energy and how energy stores and transfers work. Finally this term, students will study cells and how they work. This will include their structure and the processes of respiration and diffusion.	**Students next summative test will take place at the start of the summer term, and results reported home. The majority of the test will be on topics 4 to 7 although there will be a small about of key knowledge from prior topics that will also be tested.**	**Revision techniques will be taught alongside the science content. You can ask your child which revision techniques they are using and have them explain why they work (mind maps, flash cards, etc.). They can also show you the knowledge organisers they have been using for revision for each topic. You may also help by testing your child on key knowledge after they have revised it (little and often is better than everything at the same time).**
Summer Term	8.Reproduction & Growth 9. Pressure 10. Separating Mixtures 11. Nutrition & Digestion 12. Earth & the Universe	Students begin the summer term building upon the knowledge they have previously gained. In the first topic of the term they will study the entire human lifecycle from birth to death. This will draw on previous knowledge of cells, energy, diffusion, chemical reactions and respiration. The next topic pressure builds upon the work done in the forces topic introducing equations and calculations. Separating mixtures looks at the differences between pure and impure substances and solubility. Students will use their knowledge of particles to explain each separation technique. Nutrition & digestion studies the human digestive system and how nutrients are extracted from food into our bodies. Students will use their knowledge of catalysts, solubility and diffusion to support this. Finally students finish the year studying space. They will learn how the bodies in the solar system are arranged along with phases of the moon, seasons and gravity (which again revisits student's prior work on forces).	**The final test of the year will cover all content from topics 1-10. This test will not be reported home but will inform where students are placed in mixed ability sets in Y8.**	**Revision techniques will be taught alongside the science content. You can ask your child which revision techniques they are using and have them explain why they work (mind maps, flash cards, etc.). They can also show you the knowledge organisers they have been using for revision for each topic. You may also help by testing your child on key knowledge after they have revised it (little and often is better than everything at the same time).**

Year 8 Curriculum Overview: Science

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	Topics/ content outline:	Powerful Knowledge (key concepts, skills)	What will you be assessed on?	How can you help at home?
Autumn Term	1. Skeleton & Muscles 2. Waves (Light & Sound) 3.Acids & Alkalis 4. Photosynthesis, Food Webs & Interdependence 5. Electricity & Electromagnets	Topics in Y8 are slightly shorter as they build on prior powerful knowledge gained in Y7. In skeleton & muscles student will study the musculoskeletal system and build upon the knowledge of forces, energy and respiration. Waves builds on energy with students learning about types of waves, the eye, colour, light and sound (where they will again revisit pressure). Acids & alkalis builds on the knowledge of chemical reactions. Photosynthesis, food webs & interdependence builds on knowledge of cells, chemical reactions, particles and energy. Finally, electricity and electromagnets builds on energy and particles and expand upon ideas about magnetic fields.	**Students first summative test will take place at the end of the term, and results reported home. It will cover material up to topic 4.**	**Revision techniques will be taught alongside the science content. You can ask your child which revision techniques they are using and have them explain why they work (mind maps, flash cards, etc.). They can also show you the knowledge organisers they have been using for revision for each topic.** **You may also help by testing your child on key knowledge after they have revised it (little and often is better than everything at the same time).**
Spring Term	6. Plant Reproduction 7. Metals 8. Microorganisms 9. Health 10. Heating & Cooling	Plant reproduction revisits ideas of gametes from human reproduction and builds upon the work done on plant cells. In the metals topic students expand upon their prior work on chemical reactions and study specific reactions of metals as well as the reactivity series. Microorganisms builds on the knowledge of cells from Y7 and expands upon the differences between animal and bacterial cells. Students also leant the uses of anaerobic respiration in yeast. [Health] Heating and cooling builds on knowledge of energy and particles. Students will learn the 3 types of heat transfer and what effects rate of heat transfer.	**Students first summative test will take place at the end of the term, and results reported home. It will cover material from topic 5 up to topic 9.**	**Revision techniques will be taught alongside the science content. You can ask your child which revision techniques they are using and have them explain why they work (mind maps, flash cards, etc.). They can also show you the knowledge organisers they have been using for revision for each topic.** **You may also help by testing your child on key knowledge after they have revised it (little and often is better than everything at the same time).**
Summer Term	11. Earth & the Atmosphere 12. Variation, Genetics & Evolution 13. Machines 14. Material Science 15. Generating Electricity	Earth & the atmosphere builds on energy, pressure, particles and chemical reactions. Students will learn both the rock and carbon cycle and be able to explain these processes. Variation, genetics & evolution builds on cells and introduces DNA and natural selection. Machines builds upon forces, energy and pressure. Students will be able to calculate the effect of force multipliers such as levers, pulleys and hydraulics. Material science builds on particles and how different arrangements and combinations of particles and materials can affect the properties of a material. Generating electricity builds on the electricity and atmosphere topics and examines the various ways of generating electricity alongside their effects on the environment.	**The final test of Y8 will cover content from both Y7 and will focus on the powerful knowledge studied on Forces, Energy, Reactions, Matter and Cells. Results will not be reported home but will help inform setting going into Year 9.**	**Revision techniques will be taught alongside the science content. You can ask your child which revision techniques they are using and have them explain why they work (mind maps, flash cards, etc.). They can also show you the knowledge organisers they have been using for revision for each topic.** **You may also help by testing your child on key knowledge after they have revised it (little and often is better than everything at the same time).**