KS3 Science CURRICULUM MAP

Intent:

By studying science at RMGS the students should gain an insight into the importance of the subject in the 21st Century.
We build understanding of the '10 Big Ideas' in Science to give the students the foundations for GCSE science, the science curriculum aims to introduce students to a vast range of scientific phenomenon that will help them to better understand the world, and build robust knowledge over time. We aim to encourage the students to develop a positive and practical approach to science and seek to develop key scientific skills, combining knowledge with practical application and establish cross-curricular links, where appropriate. During this curriculum journey for science, they will develop their abilities to work together; know and recall their substantive knowledge in biology, chemistry and physic; reflect on the social, moral, cultural and spiritual impact science has on the world and expand their cultural capital experiences within science; develop their disciplinary knowledge such as methods, apparatus and techniques, data analysis and communications and using evidence for explanations (working scientifically); gain an insight to the types of career available, which are becoming increasingly scientific and technologically based.

YEAR 7	Forces	Matter	Organisms	Energy	Reactions
Key Knowledge	• Understanding speed • Describing journeys with distance-time graphs • Exploring journeys on distance-time graphs • Investigating the motion of a car on a ramp • Understanding relative motion • Understanding forces • Understanding gravitational fields • Understanding mass and weight • Understanding gravity	• Using particles to explain matter • Understanding solids • Understanding liquids and gases • Exploring diffusion • Explaining changes of state • Separating mixtures • Exploring solutions • Understanding distillation • Exploring chromatography	• Exploring the human skeleton • Understanding the role of joints and muscles • Examining interacting muscles • Exploring problems with the skeletal system • Understanding organisation in multicellular organisms • Describing plant and animal cells • Understanding adaptations of cells • Exploring cells • Understanding unicellular organisms	• Looking at the cost of energy use in the home • Using electricity responsibly • Understanding energy transfers by fuels and food • Comparing rates of energy transfer • Getting the electricity we need • Stores and transfers • Exploring energy transfers • Understanding potential energy and kinetic energy • Understanding elastic potential energy	• Using metals and non-metals • Exploring the reactions of acids with metals • Understanding displacement reactions • Understanding oxidation reactions • Exploring acids • Exploring alkalis • Using indicators • Exploring neutralisation • Investigating neutralisation
Key Subject Skills	• Analyse patterns • Discuss limitations • Draw conclusions • Present data • Communicate ideas • Construct explanations • Collect data • Devise questions	• Analyse patterns • Discuss limitations • Draw conclusions • Present data • Communicate ideas • Construct explanations • Collect data • Estimate risks • Devise questions	• Analyse patterns • Discuss limitations • Draw conclusions • Present data • Communicate ideas • Construct explanations • Critique claims • Justify opinions • Devise questions	• Analyse patterns • Discuss limitations • Draw conclusions • Communicate ideas • Construct explanations • Critique claims • Justify opinions • Examine consequences	• Analyse patterns • Discuss limitations • Draw conclusions • Present data • Communicate ideas • Construct explanations • Critique claims • Collect data • Devise questions

	• Plan variables • Test hypothesis	• Test hypothesis • Review theories	• Plan variables • Test hypothesis	• Interrogate sources	• Plan variables • Test hypothesis • Estimate risks • Examine consequences
Personal development: • **RSE** • **Online safety** • **Enrichment**	Science Club Astronomy Club				
Connections with careers	Physicist	Analytical chemist	Biologist Medical		Chemist Chemical engineer
Home support	Following assessments, the students are asked to reflect on their learning using the Teams-based Feedback Sheet and how they can improve going forward. There are various platforms to enable them to do this, eg BBCBiteSize, ContinuityOak(Videos)				

YEAR 7 cont.	**Ecosystems**	**Electricity**	**Waves**	**Genes**	**Earth**
Key Knowledge	• Understanding food webs • Understanding the effects of toxins in the environment • Exploring the importance of insects • Exploring ecological balance • Exploring flowering plants • Exploring fertilisation	• Describing electric circuits • Understanding energy in circuits • Explaining resistance • Describing series and parallel circuits • Comparing series and parallel circuits	• Learning about the reflection and absorption of sound • Exploring properties of light • Exploring reflection • Exploring refraction • Seeing clearly • Exploring coloured light • Exploring light	• Looking at variation • Exploring the causes of variation • Understanding the female reproductive system and fertility • Understanding the male reproductive system and fertilisation • Learning how a foetus develops	• Understanding the structure of the Earth • Exploring igneous rocks • Exploring sedimentary rocks • Exploring metamorphic rocks • Understanding the rock cycle • Describing stars and galaxies

	• Understanding how seeds are dispersed • Understanding how fruits disperse seeds			• Understanding factors affecting a developing foetus • Communicating ideas about smoking in pregnancy	• Explaining the effects of the Earth's motion • Exploring our neighbours in the Universe • Using models in science
Key Subject Skills	• Discuss limitations • Draw conclusions • Present data • Communicate ideas • Construct explanations • Critique claims • Justify opinions • Collect data • Devise questions • Plan variables • Test hypothesis	• Draw conclusions • Present data • Communicate ideas • Construct explanations • Devise questions • Plan variables • Test hypothesis	• Communicate ideas • Construct explanations • Devise questions • Test hypothesis	• Analyse patterns • Discuss limitations • Draw conclusions • Present data • Communicate ideas • Construct explanations • Critique claims • Justify opinions • Examine consequences • Review theories • Interrogate sources	• Analyse patterns • Discuss limitations • Draw conclusions • Present data • Communicate ideas • Construct explanations • Justify opinions • Review theories
Personal development: • **RSE** • **Online safety** • **Enrichment**	Science Club Astronomy Club				
Connections with careers	Biologist Environmental scientist	Physicist Electrician Electrical engineer		Medicine Midwife	Geologist Geophysicist
Home support	Following assessments, the students are asked to reflect on their learning using the Teams-based Feedback Sheet and how they can improve going forward. There are various platforms to enable them to do this, eg BBCBiteSize, ContinuityOak(Videos)				

YEAR 8	Forces	Organisms	Matter	Energy	Reactions
Key Knowledge	• Analysing equilibrium • What a drag • Understanding stretch and compression • Investigating Hooke's Law • Exploring pressure on a solid surface • Exploring pressure in a fluid • Calculating pressure • Explaining floating and sinking	• Understanding how we breathe • Measuring breathing • Explaining gas exchange in humans • Exploring the effects of disease and lifestyle • Exploring a healthy diet • Understanding the effects of an unbalance diet • Understanding the human digestive system • Understanding the roles of the digestive organs	• Looking at the periodic table of elements • Exploring metals in the periodic table • Exploring non-metals in the periodic table • Analysing wider patterns within the periodic table • Analyse patterns • Discuss limitations • Draw conclusions • Present data • Estimate risks • Review theories	• Doing work • Making work easier • Explaining thermal energy • How heat travels • How to stop heat from travelling • Energy, heating and cooling	• Understanding exothermic reactions • Comparing endothermic and exothermic changes • Investigating endothermic reactions • Explaining the use of catalysts • Exploring combustion • Exploring the use of fuels • Understanding thermal decomposition • Explaining changes
Key Subject Skills	• Analyse patterns • Discuss limitations • Draw conclusions • Present data • Communicate ideas • Construct explanations • Collect data • Devise questions • Plan variables • Test hypothesis	• Analyse patterns • Discuss limitations • Draw conclusions • Present data • Communicate ideas • Construct explanations • Critique claims • Justify opinions • Plan variables • Test hypothesis • Interrogate sources	• Analyse patterns • Discuss limitations • Draw conclusions • Present data • Communicate ideas • Construct explanations • Review theories • Analyse patterns • Discuss limitations • Draw conclusions • Present data	• Analyse patterns • Discuss limitations • Draw conclusions • Present data • Communicate ideas • Construct explanations • Critique claims • Collect data • Devise questions	• Analyse patterns • Collect data • Communicate ideas • Construct explanations • Critique claims • Devise questions • Discuss limitations • Draw conclusions • Estimate risks • Justify opinions • Present data

			• Estimate risks • Review theories	• Plan variables • Test hypothesis	• Test hypothesis
Personal development: • **RSE** • **Online safety** • **Enrichment**	Science Club Astronomy Club Salter's Festival of Chemistry Ada Lovelace Day (Women in Science) - STEM Event at Kent Science Park				
Connections with careers	Physicist	Analytical chemist	Biologist Medical		Chemist Chemical engineer
Home support	Following assessments, the students are asked to reflect on their learning using the Teams-based Feedback Sheet and how they can improve going forward. There are various platforms to enable them to do this, eg BBCBiteSize, ContinuityOak(Videos)				

YEAR 8 cont.	**Ecosystems**	**Electricity**	**Waves**	**Genes**	**Earth**
Key Knowledge	• Understanding aerobic respiration • Exploring respiration in sport • Understanding anaerobic respiration • Investigating fermentation • Comparing aerobic and anaerobic respiration • Exploring how plants make food • Looking at leaves	• Investigating static charge • Explaining static charge • Understanding electrostatic fields • Investigating electromagnetism • Using electromagnets • Investigation strength of electromagnets • Forces and fields	• Exploring waves • Comparing transverse and longitudinal waves • Exploring sound • Describing sound • Hearing sounds • Understanding how sound travels through materials • Learning about the reflection and absorption of sound • Exploring sound	• Explaining natural selection • Understanding the importance of biodiversity • Explaining extinction • Understanding the nature of genetic material • Exploring the role of chromosomes • Understanding variation • Modelling inheritance	• Understanding our atmosphere • Understanding how carbon is recycled • Exploring how humans affect the carbon cycle • Understanding global warming • Exploring damage to the Earth's resources • Considering the importance of recycling • How to extract metals

	• Exploring the movement of water and minerals in plants • Investigating the importance of minerals to plants • Investigating photosynthesis	• Using ideas about fields	• Sound systems		
Key Subject Skills	• Analyse patterns • Discuss limitations • Draw conclusions • Present data • Communicate ideas • Construct explanations • Collect data • Devise questions • Plan variables • Test hypothesis • Estimate risks • Examine consequences	• Analyse patterns • Draw conclusions • Present data • Communicate ideas • Construct explanations • Collect data • Devise questions • Plan variables • Test hypothesis • Estimate risks	• Analyse patterns • Draw conclusions • Communicate ideas • Construct explanations • Justify opinions • Examine consequences	• Draw conclusions • Communicate ideas • Construct explanations • Critique claims • Justify opinions • Review theories • Interrogate sources	• Analyse patterns • Collect data • Communicate ideas • Construct explanations • Draw conclusions • Estimate risks • Examine consequences • Justify opinions • Present data • Review theories
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