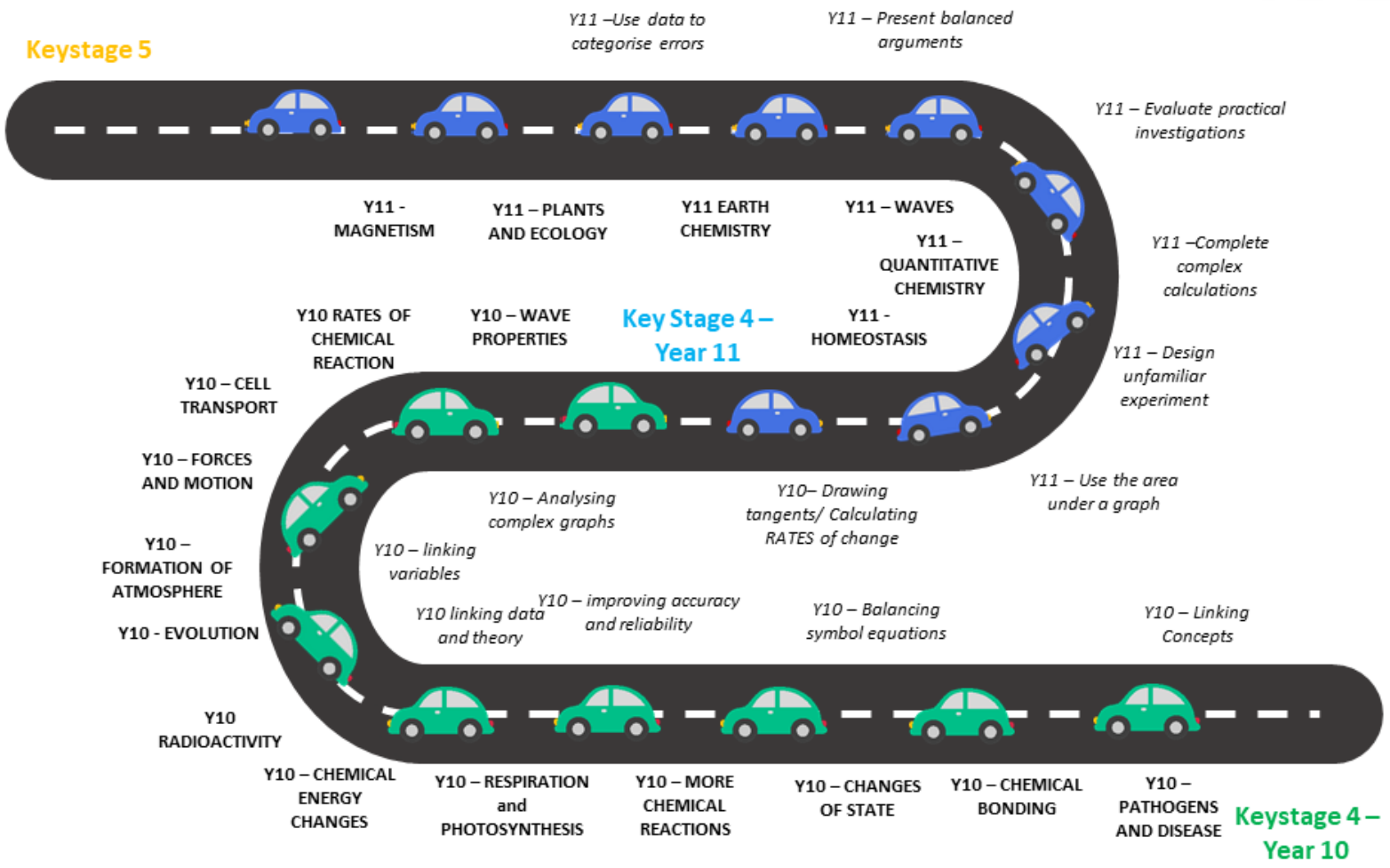
Hailsham Community College - Secondary

Science Curriculum

Science Curriculum Roadmap



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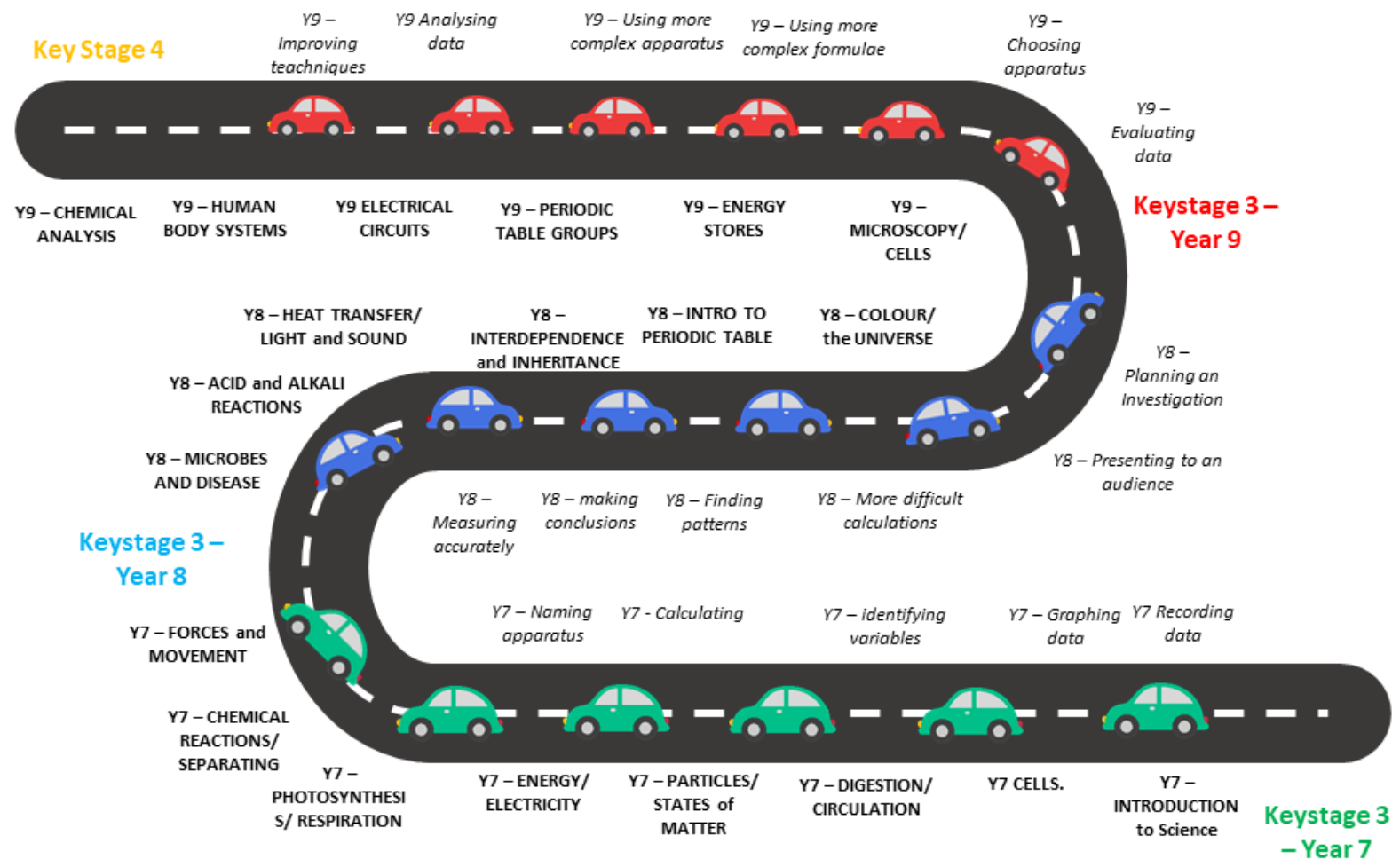

Year	Term	Overview	Knowledge	Skills
7	1	**Introduction to Science** A unit to ensure that all students are able to safely work in a secondary science laboratory, and are used to the routines in the department **Year 7 Biology 1:** Cells and the Human Body	Students can name basic apparatus. Students are aware of health and safety rules in the lab. They are introduced to key vocabulary to do with practical science investigations. Students will learn the names of the different parts of animal and plant cells and examples of specialised cells. Students will then learn about the digestive, respiratory and circulatory systems. Naming organs in these systems and explaining how they work together to keep us alive	• Safe use of a Bunsen burner • Use of key apparatus to measure • Introduction to graph drawing • Use of a microscope • Scientific Drawing • Use of reagents to identify food groups
	2	**Year 7 Chemistry 1:** Students recap the particle model of solids, liquids and gases, and look at changes of state. They are introduced to elements and compounds and the periodic table	Students learn to link the properties of solids, liquids and gases to their particle structure. They will compare properties of metals and non-metals. They will look at simple chemical reactions and identify reactants and products.	• Using chemical formulae to calculate numbers of atoms. • Identifying hazards and working safely. • Naming and using lab. Equipment. • Making observations and recording results. • Drawing conclusions from results.
	3	**Year 7 Physics 1:** Students start to learn about energy stores and transfers. They will identify why we need energy, how it provides our homes with electricity and why alternate energy resources are important.	Students will identify the different energy stores. Students will explain how fossil fuels are formed, and why they are a finite resource	• Students will learn to compare, discuss and evaluate different energy resources and how they are more sustainable

		Students will explore electrical circuits, identifying key components and how they work together.	Students will identify other energy resources which could be use to replace fossil fuels. Students will know, and be able to make the, different types of electrical circuit, explaining how electricity flows through some materials and transfers energy from component to component.	than non-renewables which are currently in use. • Be able to build electrical circuits from circuit diagrams. • Substituting numbers into a given formula
	4	**Year 7 Biology 2:** Students build on KS2 knowledge of photosynthesis. They look at gas exchange and respiration in humans.	Students will learn about plant cells, organs, and photosynthesis, and how plants get their energy. Gas exchange to and from plants and the position of plants in food chains and how cells in all plants are adapted for their function Muscle movement, and the human bodies response to exercise. The water cycle, and its importance in life. Respiration of yeast and the uses of this respiration both aerobically and anaerobically	• Plotting line graphs • Use basic laboratory apparatus • Record results in a suitable results table • Identify variables • Identify hazards
	5	**Year 7 Chemistry 2:**	Students will learn the differences between elements , compounds and mixtures. Writing chemical reactions and recognizing and writing chemical formulae. Students will learn about various separation techniques for example filtration . They will also learn practical skills associated with making and separating mixtures.	• Use of basic laboratory apparatus • Planning a method to investigate a problem • Writing a simple method

	6	**Year 7 Physics 2:** Students build on their KS2 knowledge of forces, learning to do more complex investigations and calculations.	Students learn how to identify resultant forces acting, and to see their effects. They investigate the forces of upthrust, friction and weight and look for patterns. They are introduced to magnets and electromagnets.	• Substituting numbers into a given formula. • Calculating a mean value • Identifying variables in an investigation • Plotting line graphs

Year	Term	Overview	Knowledge	Skills
8	1	**Year 8 Biology 1:** An introduction to health and disease, starting to look at how the human body defends itself.	Pupils learn about the different types of pathogen and how our body defends itself against them. We learn how vaccines and medicines work to help fight infection and look at examples of genetic disorders. Pupils will also consider what can increase the risk non communicable diseases like heart disease and cancer.	• How to interpret data from graphs • Evaluating scientific information • Aseptic techniques when growing bacterial plates
	2	**Year 8 Chemistry 1:** During this unit students will look at common chemical reactions and writing the equations that link to them.	Students will recap what elements, compounds and mixtures are. Students will learn to write chemical formulae and balance chemical equations. Students will learn the basic concepts of: rusting, combustion, displacement, neutralisation and conservation of mass. Students will complete experiments such as: rusting, combustion, displacement, neutralisation and conservation of mass. Students will be able to identify types of variables withing these experiments.	Identify discrete variables. Balancing equations. Percentage calculations. Rounding to appropriate significant figures. • Name and use a conical flask, tape measure, indicators,

				evaporating basin, tongs. • Design own results tables with units and record results and observations. • Write a simple step-by step method. • Identify control measures to minimise risks. • Provide examples of where data supports conclusions, ie giving specific values from graphs or data tables. • Suggest improvements of an experiment based on errors in method. • Produce statements that agree or disagree with a conclusion in a data set. •
	3	**Year 8 Physics 1:** Students learn about the movement of particles and energy and how that impacts the materials around them	Students recap their knowledge of the particle model. Students learn about thermal conduction, insulation and radiation. Students complete experiments about thermal conduction, insulation and radiation.	Change the subject of a simple formula. • Use the FIFA method to present answers to calculations. • Calculate percentages.

			Students learn about density and how to calculate it. Students lean about convection and how it happens. Students learn about pressure and how to calculate it. Students learn about sound waves and how they travel. Students learn about light and how it can be reflected and refracted.	• Rounding to appropriate significant figures. • Design own results tables with units and record results and observations. • Provide examples of where data supports conclusions, ie giving specific values from graphs or data tables. • Link independent and dependent variables to draw a conclusion.
	4	**Year 8 Biology 2:** Interdependence, evolution and classification	Pupils will learn to construct food chains and webs to show how living things in an ecosystem are all connected. They will look at how animals are adapted to an environment and begin to understand the process of evolution by natural selection. They will then look at how animals and plants can be classified and finally learn about the different ways humans can have positive and negative impacts on the environment.	• Evaluation of scientific data • Describe how evidence supports or counteracts theories
	5	**Year 8 Chemistry 2:** Properties of elements and Chemical Reactions	Students will learn about: -How the Early periodic Table and Modern Periodic Table were established and set up -The properties and trends of group 1, group 7 and group 0 -Reaction of metals with oxygen, water and acids	• Use of key apparatus • Making predictions based on data • Suggest improvements of an experiment based on errors in method.

			Writing word equations, symbol equations and stating states of reactants and products Chemical composition of the earth's structure and the Atmosphere -Acid Rain	
	6	**Year 8 Physics 2:** Students will develop understanding about how we see light, exploring the parts of the electromagnetic spectrum. Students will learn about the day/night cycle, what causes the phases of the moon, the seasons before exploring the larger questions about the universe and life on other planets.	Students will learn how we see colours- exploring different colours of light and how they are reflect and are observed by different surfaces. Students will look at the electromagnetic spectrum, exploring uses of different parts of this. In space, students will look at what causes day and night, the moon phases and the seasons. Students will compare the orbits and relative sizes of stars, planets, moons and other objects in the solar system.	• Record results accurately • Use of data to make predictions • Choose scales when plotting line graphs • Analyse graphs to find patterns

Year 7	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
What powerful knowledge is being assessed?	Introduction to science skills so all students are familiar with lab working and safety test	7B1, 7C1 and 7P1 Include 'Working Scientifically' and 'Maths Skills'	7B1, 7C1 and 7P1 Test on all unit 1 after Xmas Include 'Working Scientifically' and 'Maths Skills'	7B2, 7C2 and 7P2 Include 'Working Scientifically' and 'Maths Skills'	7B1 7B2, 7C1 7C2, 7P1 7P2 Cumulative assessment Include 'Working Scientifically' and 'Maths Skills'	7B1 7B2, 7C1 7C2, 7P1 7P2 Post assessment task Include 'Working Scientifically' and 'Maths Skills'
How (type of assessment)?	Written Assessment of low stakes questions on core questions from scheme and retrieval every lesson	Low stakes retrieval each lesson.. Regular (fortnightly tests too) low stakes and test	Written Assessment. Cumulative assessment on 1st unit topics B1, C1, P1. Low stakes retrieval each lesson.. Regular (fortnightly) pop quizzes	Low stakes retrieval each lesson.. Regular (fortnightly) pop quizzes	Written Assessment. Cumulative assessment Low stakes retrieval each lesson.. Regular (fortnightly) pop quizzes	Low stakes retrieval each lesson.. Regular (fortnightly) pop quizzes Written task on post assessment tasks
When?	Every lesson (retrieval), every fortnight (Pop Quiz) One test in 3rd week term 1	Done fortnightly and every lesson for retrieval At end of each topic	Every lesson (retrieval), every fortnight (Pop Quiz) Test 1st week after Xmas	Every lesson retrieval and fortnightly low stakes quiz	Every lesson (retrieval), every fortnight (Pop Quiz) 4th week of term for Assessment	Starting year 8 work or projects
What feedback is given?	Whole class feedback. Self and peer assessment.	Whole class Feedback, Individual gaps identified	Whole class feedback. Self and peer assessment.	Whole class Feedback, Individual gaps identified	Whole class feedback. Self and peer assessment.	Whole class Feedback, Individual gaps identified
What actions must take place for teachers?	High quality questioning.	Assess whole. Identify key gaps to reteach immediately	High quality questioning.	Assess whole. Identify key gaps to reteach immediately	High quality questioning.	Assess whole. Identify key gaps to reteach immediately

	Regular looks at students written work to assess focus for WCF	to whole class, and individual actions for students	Regular looks at students written work to assess focus for WCF	to whole class, and individual actions for students	Regular looks at students written work to assess focus for WCF	to whole class, and individual actions for students
What actions must take place for students ?	Correct work as appropriate	Students complete home learning tasks linked to gaps	Correct work as appropriate	Students complete home learning tasks linked to gaps	Correct work as appropriate	Students complete home learning tasks linked to gaps
When is this revisited?	Reflection tasks forms quizzes as homework	All terms in retrieval. All terms reflection forms quizzes	All terms in retrieval. All terms reflection forms quizzes	All terms in retrieval. All terms reflection forms quizzes	All terms in retrieval. All terms reflection forms quizzes	All terms in retrieval. All terms reflection forms quizzes

Year 8	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
What powerful knowledge is being assessed?	8B1 , 8C1 , 8P1. Include 'Working Scientifically' and 'Maths Skills'	B1, C1, P1 Include 'Working Scientifically' and 'Maths Skills'	B2, C2, P2 Include 'Working Scientifically' and 'Maths Skills'	B2, C2, P2, Include 'Working Scientifically' and 'Maths Skills'	B2, C2, P2. Include 'Working Scientifically' and 'Maths Skills'	Core knowledge from KS3 linked to modules.
How (type of assessment)?	Low stakes retrieval each lesson Regular (fortnightly) pop quizzes and forms quizzes.	Cumulative Written Assessment	Low stakes retrieval each lesson Regular (fortnightly) pop quizzes and forms quizzes.	Cumulative Written Assessment	Cumulative Written Assessment – End of Term 5	Low stakes retrieval each lesson Regular (fortnightly) pop quizzes and forms quizzes.
When?	Every lesson (retrieval), every fortnight (Pop Quiz)	Week 2 or 3	Every lesson (retrieval), every fortnight (Pop Quiz)	Week 1	Week 5	Every lesson (retrieval), every fortnight (Pop Quiz)
What feedback is given?	Whole class feedback. Self and peer assessment.	Whole class Feedback, Individual gaps identified	Whole class feedback. Self and peer assessment.	Whole class Feedback, Individual gaps identified	Whole class feedback. Self and peer assessment.	Whole class Feedback, Individual gaps identified
What actions must take place for teachers?	High quality questioning. Regular looks at students written work to assess focus for WCF	Assess whole. Identify key gaps to reteach immediately to whole class, and individual actions for students	High quality questioning. Regular looks at students written work to assess focus for WCF	Assess whole. Identify key gaps to reteach immediately to whole class, and individual actions for students	High quality questioning. Regular looks at students written work to assess focus for WCF	Assess whole. Identify key gaps to reteach immediately to whole class, and individual actions for students
What actions must take place for students ?	Correct work as appropriate	Students complete home learning tasks linked to gaps	Correct work as appropriate	Students complete home learning tasks linked to gaps	Correct work as appropriate	Students complete home learning tasks linked to gaps
When is this revisited?		All term 2/3 in retrieval. Term 4 written assessment		All term 4/5 in retrieval. Term 6 written assessment		Through Term 6 in retrieval

Year 9	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
What powerful knowledge is being assessed?	Core Knowledge from KS3 linked to modules.	B1, C1, P1.1 Include 'Working Scientifically' and 'Maths Skills'	B1, C1, P1.1 Include 'Working Scientifically' and 'Maths Skills'	B1, C1, P1.1, B2, C2, P2.1 Include 'Working Scientifically' and 'Maths Skills'	B1, C1, P1.1, B2, C2, P2.1 Include 'Working Scientifically' and 'Maths Skills'	B1-3, C1-3, P1-3 Include 'Working Scientifically' and 'Maths Skills'
How (type of assessment)?	Low stakes retrieval each lesson.. Regular (fortnightly) pop quizzes	Written Assessment	Low stakes retrieval each lesson.. Regular (fortnightly) pop quizzes	Written Assessment	Low stakes retrieval each lesson.. Regular (fortnightly) pop quizzes	Written Assessment
When?	Every lesson (retrieval), every fortnight (Pop Quiz)	First Week of term 2	Every lesson (retrieval), every fortnight (Pop Quiz)	First Week Term 4	Every lesson (retrieval), every fortnight (Pop Quiz)	First Week Term 6
What feedback is given?	Whole class feedback. Self and peer assessment.	Whole class Feedback, Individual gaps identified	Whole class feedback. Self and peer assessment.	Whole class Feedback, Individual gaps identified	Whole class feedback. Self and peer assessment.	Whole class Feedback, Individual gaps identified
What actions must take place for teachers?	High quality questioning. Regular looks at students written work to assess focus for WCF	Assess whole. Identify key gaps to reteach immediately to whole class, and individual actions for students	High quality questioning. Regular looks at students written work to assess focus for WCF	Assess whole. Identify key gaps to reteach immediately to whole class, and individual actions for students	High quality questioning. Regular looks at students written work to assess focus for WCF	Assess whole. Identify key gaps to reteach immediately to whole class, and individual actions for students
What actions must take place for students ?	Correct work as appropriate	Students complete home learning tasks linked to gaps	Correct work as appropriate	Students complete home learning tasks linked to gaps	Correct work as appropriate	Students complete home learning tasks linked to gaps
When is this revisited?		All term 2/3 in retrieval. Term 4 written assessment		All term 4/5 in retrieval. Term 6 written assessment		Through Term 6 in retrieval

Year 10	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
What powerful knowledge is being assessed?	B1, B2, C1, C2, P1, P2. Include 'Working Scientifically' and 'Maths Skills'	B1-3, C1-3, P1-3 for combined. B1-4, C1-5, P1-4 for triple. Include 'Working Scientifically' and 'Maths Skills'	B1-3, C1-3, P1-3 for combined. B1-4, C1-5, P1-4 for triple. Include 'Working Scientifically' and 'Maths Skills'	B3-5, C3-5, P3-5 for combined. B4-8, C4-8, P4-6.1 for triple. Include 'Working Scientifically' and 'Maths Skills'	B1-5, C1-5, P1-5 for combined. B1-8, C1-8, P1-6.1 for triple. Include 'Working Scientifically' and 'Maths Skills'	Adapted paper 1 for biology and chemistry, combined and triple. B1-5 for combined and triple. Include 'Working Scientifically' and 'Maths Skills'
How (type of assessment)?	Low stakes retrieval each lesson.. Regular (fortnightly) pop quizzes	Written Assessment	Low stakes retrieval each lesson.. Regular (fortnightly) pop quizzes	Written Assessment	Low stakes retrieval each lesson.. Regular (fortnightly) pop quizzes	Written Assessment
When?	Every lesson (retrieval), every fortnight (Pop Quiz)	First Week of term 2	Every lesson (retrieval), every fortnight (Pop Quiz)	First Week Term 4	Every lesson (retrieval), every fortnight (Pop Quiz)	First Week Term 6
What feedback is given?	Whole class feedback. Self and peer assessment.	Whole class Feedback, Individual gaps identified	Whole class feedback. Self and peer assessment.	Whole class Feedback, Individual gaps identified	Whole class feedback. Self and peer assessment.	Whole class Feedback, Individual gaps identified
What actions must take place for teachers?	High quality questioning. Regular looks at students written work to assess focus for WCF	Assess whole. Identify key gaps to reteach immediately to whole class, and individual actions for students	High quality questioning. Regular looks at students written work to assess focus for WCF	Assess whole. Identify key gaps to reteach immediately to whole class, and individual actions for students	High quality questioning. Regular looks at students written work to assess focus for WCF	Assess whole. Identify key gaps to reteach immediately to whole class, and individual actions for students
What actions must take place for students ?	Correct work as appropriate	Students complete home learning tasks linked to gaps	Correct work as appropriate	Students complete home learning tasks linked to gaps	Correct work as appropriate	Students complete home learning tasks linked to gaps
When is this revisited?		All term 2/3 in retrieval. Term 4 written assessment		All term 4/5 in retrieval. Term 6 written assessment		Through Term 6 in retrieval

Year 11	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
What powerful knowledge is being assessed?	Paper 1. Include 'Working Scientifically' and 'Maths Skills'	Paper 1 + B5/6, C5-8, P5/6 Include 'Working Scientifically' and 'Maths Skills'	Paper 2 Include 'Working Scientifically' and 'Maths Skills'	Paper 1 + 2 Include 'Working Scientifically' and 'Maths Skills'	Paper 1 + 2 Include 'Working Scientifically' and 'Maths Skills'	
How (type of assessment)?	Written Assessment – mock exam in hall	Low stakes retrieval each lesson. Regular (fortnightly) pop quizzes	Written Assessment – Mock exam in hall	Low stakes retrieval each lesson. Regular (fortnightly) pop quizzes	Low stakes retrieval each lesson. – Actual GCSE	
When?	Week 6+7 term 1	Every lesson (retrieval), every fortnight (Pop Quiz)	Week 5+6 Term 3	Every lesson (retrieval), every fortnight (Pop Quiz)	Last 2 weeks GCSE begins	
What feedback is given?	Whole class Feedback, Individual gaps identified	Whole class feedback. Self and peer assessment.	Whole class Feedback, Individual gaps identified	Whole class feedback. Self and peer assessment.	Whole class feedback. Self and peer assessment.	
What actions must take place for teachers?	Assess whole. Identify key gaps to reteach immediately to whole class, and individual actions for students	High quality questioning. Regular looks at students written work to assess focus for WCF	Assess whole. Identify key gaps to reteach immediately to whole class, and individual actions for students	High quality questioning. Regular looks at students written work to assess focus for WCF	High quality questioning. Regular looks at students written work to assess focus for WCF	
What actions must take place for students ?	Students complete home learning tasks linked to gaps	Correct work as appropriate	Students complete home learning tasks linked to gaps	Correct work as appropriate	Correct work as appropriate	
When is this revisited?	All term 2/3 in retrieval.		All term 4/5 in retrieval.			