

Priory's Science – INTENT & IMPLEMENTATION

Key Stage 3

At key stage 1 and 2 pupils should have learnt to understand the basic principles of:

- Plants
- Animals including humans
- Everyday materials
- Seasonal Changes
- Living things and habitats
- Rocks
- Light
- Forces and magnets
- States of matter
- Sound
- Electricity
- Earth and Space
- Evolution and inheritance
- Properties and changes of materials

The key stage 3 curriculum is therefore designed to build on prior learning that has taken place. The KS3 program of study is split into multiple schemes of learning, each starting with a lesson revisiting content that should have been previously learned. From there, new scientific ideas will be added to existing knowledge and understanding, including both scientific ideas and scientific methods/processes. Each scheme of learning ends with a revision lesson, consolidating the new content, and lessons which provide the opportunity to revisit the content of previous units, offering the opportunity for retrieval and linking with newly learned ideas.

When	What will I learn and what skills will I develop?	Why do I need to know this?	How will I learn this?
Year 7	<p>1. Introduction to science: What do scientific diagrams show? What do hazard symbols represent? How are measurements taken? How do we write scientific methods?</p> <p>2. Particles: What does matter consist of? How do different materials differ?</p> <p>3. Energy How is energy stored? How is energy transferred?</p> <p>4. Cells What are cells? Are all cells the same?</p> <p>5. Reactions What happens during chemical reactions? What happens during physical reactions?</p>	<p>All scientific content taught is considered to be important in its own right and the knowledge students acquire will ultimately help to make them cleverer and better equipped for life in the modern world.</p> <p>Incorporated within these units where relevant will be teaching on data presentation and data analysis techniques, e.g. drawing and interpreting graphs, drawing and interpreting data tables.</p>	<ul style="list-style-type: none"> • All lessons will start with a short knowledge retrieval task, activating prior learning to ease the addition of new material to the schema. • New knowledge will be gained in small, manageable and carefully planned chunks. • Questioning will be used systematically, in large volume, incorporating all students and probing to the appropriate depth to check for understanding and misconceptions. • Tier 2 and 3 scientific literacy will be taught explicitly, allowing it to become automatized in long term memory. This will be done using etymology, Frayer models, choral response, etc. Literacy will be incorporated into retrieval starters as appropriate to ensure mastery of scientific vocabulary. • Practical work will be used as appropriate to enhance and
Year 8	<p>6. Space, light and sound What is our solar system? How does light travel? How does sound travel?</p> <p>7. Relationships between organisms How do organisms interact in their environment? How do organisms reproduce?</p>		

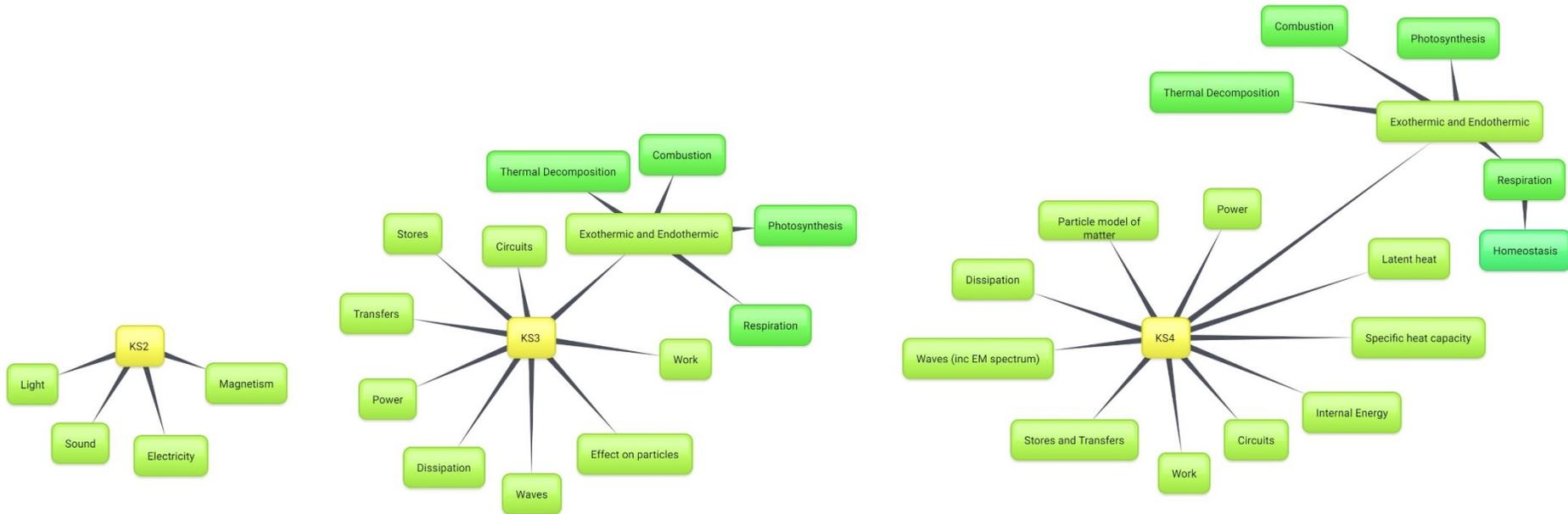
	<p>8. Periodic table How is the periodic table structured? What happens during different types of chemical reactions?</p> <p>9. Forces How do forces act on objects?</p> <p>10. Organisms How are organisms structured? What is respiration?</p> <p>11. Earth chemistry What is the structure of the Earth? What is the atmosphere made from?</p>		<p>consolidate understanding of both ideas and processes.</p> <ul style="list-style-type: none"> • Modelling will be used (I do, we do, you do, etc) to support students as necessary, building all students up to be able to complete work independently. Homework will typically be retrieval-based and linked to classroom learning. • You'll make links to other subjects as appropriate.
Year 9	<p>12. Electromagnetism What happens in an electrical circuit? What are magnets and what do they do?</p> <p>13. Genetics What is DNA? How are genes inherited?</p>		

Following this year 9 students will begin studying the foundational units of their GCSE science studies – C1 Atoms and the Periodic Table, P1 Energy and B1 Cells. These units will start with content already covered in KS3, which is then built on with new content providing a deeper understanding. During the course of year 9, students will have the option to select the Separate Science route (three GCSEs), or continue with the compulsory element of Combined Science (two GCSEs). Our KS3 will leave all students ready to begin their GCSE courses properly in September of year 10.

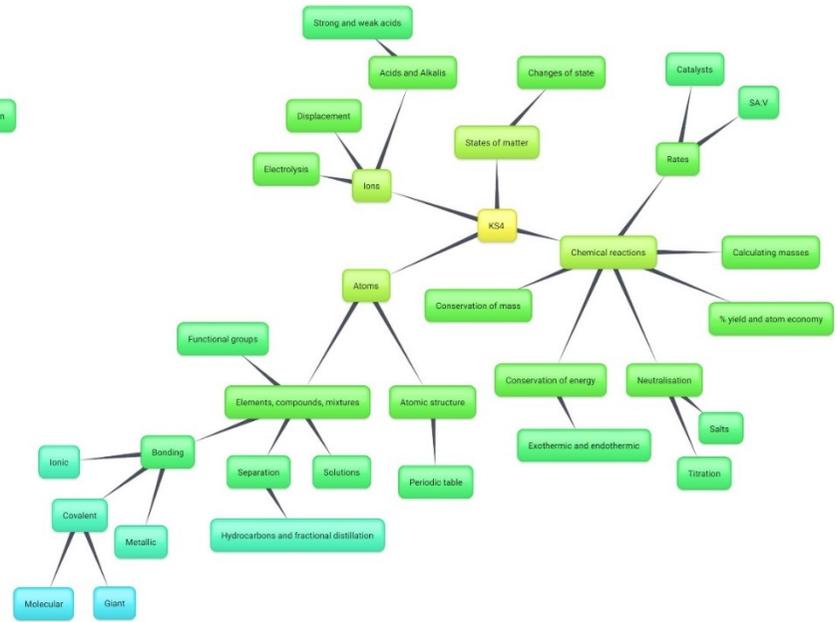
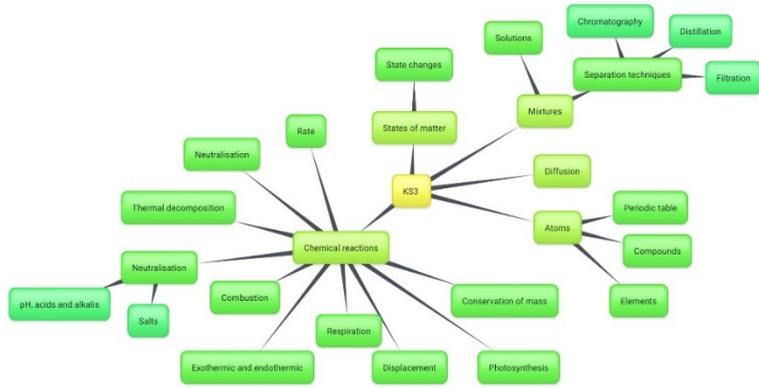
Recurring themes

NB this is not exhaustive - not all detail is shown on these diagrams; each nodule represents nested knowledge of that particular concept.

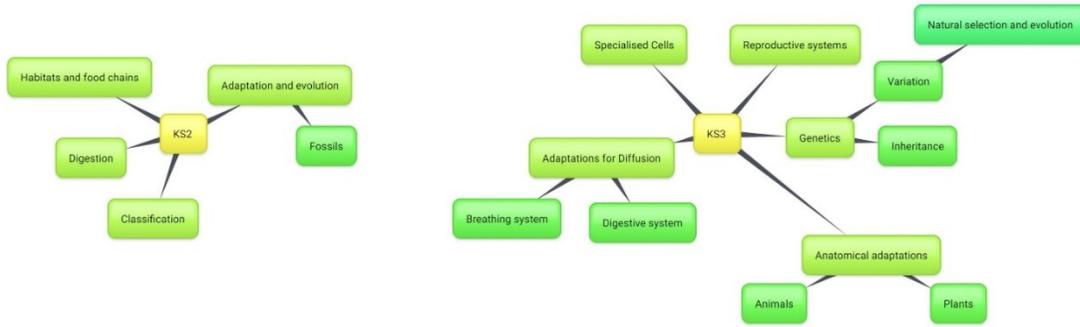
Energy:



Particles:



Adaptation and natural selection:



Key Stage 4

The intended structure of the GCSE course is shown in the table below (references to AQA specification units):

Year	Lessons per week	Possible teaching hours	#####	#####	16-Sep	#####	#####	###	###	###	#####	11-Nov	#####	#####	#####	#####	#####	13-Jan	#####	27-Jan	#####	10-Feb	#####	#####	#####	16-Mar	#####	#####	#####	#####	27-Apr	#####	11-May	16-May	01-Jun	#####	15-Jun	#####	#####	###	13-Jul										
7	3	117	Yr7 Intra	C1 - Particles								P1 - Energy (inc cumulative end of unit test)								B1 - Cells (inc cumulative end of unit test)								C2 - Chemical and Physical reactions																							
8	3	117	P2 - Space, light and sound								B2 - Organisms and ecosystems (inc cumulative end of unit test)								Text, Year 8 intra	C3 - Periodic Table								P3 - Forces (inc cumulative end of unit test)								B3 - Organisms and Organ Systems								C4 - Earth chemistry							
9	3	117	P4 - Electromagnetism								B4 - Genes and inheritance								KS2 recap, text	GCSE C1 Atoms and the Periodic Table								GCSE P1 Energy (inc cumulative end of unit test)								GCSE B1 Cells															
10 Bio	3hr per fortnight		B2 Organisation								Text	B4								B3 Infection and response								B5 Homeostasis and response																							
10 Chem		C2 Bonding and structure								C5 Energy Changes								C3 Quantitative								C4 Reactivity and Electrolysis (+ cells triple only)																									
10 Phy		P2 Electricity								P4 Atomic Structure								P3 Particles								P5 Forces																									
11 Bio	2	40+	B6 Genetics variation and evolution								B7 Ecology																																								
11 Chem	2	40+	C6 Rates				C7 Organic				C8 Analysis				C9 Atmosphere				C10 Earth's Resources																																
11 Phy	2	40+	P6 Waves								P7 Magnetism																																								

Literacy

At both key stages, literacy should be developed. This is done in several ways but should be explicit. Each scheme contains reading/comprehension tasks as well as writing opportunities.

Key stage 4 is terminally assessed. There is no coursework or internally assessed component. There are 6 exam papers for science, as detailed below:

Subject	Specification units	Time	Marks
Biology paper 1	B1 B2 B3 B4	Combined Science 1hr 15mins	Combined Science 70
Biology paper 2	B5 B6 B7		
Chemistry paper 1	C1 C2 C3 C4 C5	Separate Science 1hr 45 mins	Separate Science 100
Chemistry paper 2	C6 C7 C8 C9 C10		
Physics paper 1	P1 P2 P3 P4		
Physics paper 2	P5 P6 P7 (P8 Separate Phys only)		