

New 1-9 grading system Science 2016

KS3 Skill	Old KS3 Level	Old GCSE Grade	New Grade	Working Scientifically	Biology	Chemistry	Physics
			<b>9</b>	Appreciate the power and limitations of science and consider any ethical issues which may arise.	Critically evaluate the relative impact of chemical, physical and biological factors and their effect on life processes in unfamiliar contexts. Apply and use their extensive knowledge of variation and interdependence to explain and critically evaluate the impact of human activity on evolutionary and ecological Biology. <b>Is able to recall and apply more than 90% of the GCSE content covered.</b>	Use the particle model and ideas from science and across disciplines to explain complex phenomena and make critical evaluations to justify the use of a 'good enough' model. <b>Is able to recall and apply more than 90% of the GCSE content covered.</b>	Apply broader or deeper knowledge and understanding of energy in explanations of observations and phenomena. Use valid and rational argument to offer solutions to problems arising from the applications and implications of energy. <b>Is able to recall and apply more than 90% of the GCSE content covered.</b>
		<b>A*</b>	<b>8</b>	Use a variety of models such as representational, spatial, descriptive, computational and mathematical to solve problems, make predictions and to develop scientific explanations and understanding of familiar and unfamiliar facts.	Evaluate evidence from different sources about the impact of natural and artificial substances on behaviour. Use and apply their understanding of how life processes in organisms work together in unfamiliar contexts. Link and synthesise data and evidence from a range of sources to explain human impact on the biosphere. <b>Is able to recall and apply more than 80% of the GCSE content covered.</b>	Use a particle model to predict the outcome of complex chemical reactions and to produce balanced symbol equations and ionic half equations when appropriate. Explain the evidence that a chemical reaction has taken place (in a system at equilibrium) in terms of energy transfer and rearrangements of bonds between atoms. Apply knowledge of patterns of reactivity in the periodic table to evaluate critically a range of domestic and industrial processes including systems at equilibrium. Apply and use the theory of plate tectonics to explain related geological phenomena. <b>Is able to recall and apply more than 80% of the GCSE content covered.</b>	Apply knowledge and understanding of forces in explanations of observations and phenomena to complex and unfamiliar contexts. Use valid and rational argument to offer solutions to problems arising from the applications and implications of forces. Describe how evidence and arguments from different political and economic perspectives have been used to justify decisions taken to manage sustainability. Explain, using available evidence and models of the universe, why the ultimate fate of the universe is difficult to predict. <b>Is able to recall and apply more than 80% of the GCSE content covered.</b>
		<b>A</b>	<b>7</b>	Explain everyday and technological applications of science; evaluate associated personal, social, economic and environmental implications; and make decisions based on the evaluation of evidence and arguments.	Explain how the different intracellular and extracellular processes work together to support life in unfamiliar contexts. Evaluate the impact of chemical, physical and biological factors and explain their effects on life processes. Apply and use their knowledge of variation and interdependence to explain natural selection, the applications and implications of artificial selection and evolutionary and ecological relationships. <b>Is able to recall and apply more than 70% of the GCSE content covered.</b>	Use the particle model and ideas from science and across disciplines to explain phenomena and evaluate the use of the model. Use a particle model to predict the outcome of chemical reactions and to produce balanced symbol equations. Explain the evidence that a chemical reaction has taken place in terms of rearrangements of bonds between atoms, using the model of the differences of electron structure between elements Apply knowledge of patterns of reactivity in the periodic table to predict the outcomes of reactions from a range of familiar contexts. <b>Is able to recall and apply more than 70% of the GCSE content covered.</b>	Explain a wide range of complex phenomena using the principle of conservation of energy and appropriate wave or particle models. Use relationships involving more complex quantities, to make quantitative predictions in more complex and unfamiliar situations. <b>Is able to recall and apply more than 70% of the GCSE content covered.</b>
Extend*	<b>8</b>	<b>B</b>	<b>6</b>	Evaluate risks both in practical science and the wider societal context, including perception of risk in relation to data and consequences. Recognise the importance of peer review of results and of communicating results to a range of audiences.	Evaluate the accuracy and validity of primary and secondary evidence in relation to human impact on the biosphere. Explain how individual intracellular and extracellular processes and structures in plants and animals support the seven life processes. Explain why certain chemical, physical and biological factors can disrupt the seven life processes. Explain how the combined effects of changes to genes and environmental change can lead to variation in a species. Explain the fluctuations in distribution and population size using energy flow, pyramids of number and biomass, and	Link plate tectonic theory to its supporting geological evidence. Apply particle models in unfamiliar contexts, and begin to evaluate the strengths and weaknesses of the model. Refine the particle model to explore the structure of atoms, including protons, neutrons and electrons. Use a particle model to construct predictions for chemical reactions and to produce symbol equations. Explain the evidence that a chemical reaction has taken place in terms of energy transfer and rearrangements of bonds between atoms. <b>Is able to recall and apply more than 60% of the GCSE</b>	Evaluate the available evidence and explain why it favours an expanding universe as the current consensus model. Apply the concept of conservation of energy to energy efficiency calculations in living and non-living systems. Develop the idea of energy dissipation in a variety of contexts. Evaluate the economic costs and environmental effects of energy use through the measurement of energy transfers and efficiency calculations. <b>Is able to recall and apply more than 60% of the GCSE content covered.</b> <b>Or,</b>

					predator/prey relationships. <b>Is able to recall and apply more than 60% of the GCSE content covered.</b> Or, <b>Is able to recall and apply more than 90% of the KS3 content covered.</b>	<b>content covered.</b> Or, <b>Is able to recall and apply more than 90% of the KS3 content covered.</b>	<b>Is able to recall and apply more than 90% of the KS3 content covered.</b>
	7	C	5	Understand how scientific methods and theories develop over time. Use scientific theories and explanations to develop hypotheses. Evaluate methods and suggest possible improvements and further investigations. Interconvert units. Apply a knowledge of a range of techniques, instruments, apparatus, and materials to select those appropriate to the experiment	Explain how signals enable body systems to respond to internal and external changes and the effect of this on behaviour. Use primary and secondary forms of evidence to describe and explain the impact of human actions at a local, regional and global level. Explain how the specialisation of cells in plants and animals support the seven life processes in a healthy organism. Explain how chemical, physical and biological factors can disrupt the seven life processes. <b>Is able to recall and apply more than 50% of the GCSE content covered.</b> Or, <b>Is able to recall and apply more than 80% of the KS3 content covered.</b>	Explain properties and patterns in reactivity in terms of a particle model for atomic structure. Evaluate and refine the particle model to explain a range of physical observations. · Evaluate and refine the particle model to explain a range of separation techniques. <b>Is able to recall and apply more than 50% of the GCSE content covered.</b> Or, <b>Is able to recall and apply more than 80% of the KS3 content covered.</b>	Describe the effects of energy transfer to living systems by electromagnetic and nuclear radiation. Use simple quantitative relationships to make predictions in more complex situations. Use simple relationships involving more complex quantities, to make quantitative predictions in familiar situations. Explain some methods used to explore the solar system and galaxy (both from the Earth and from Space). Explain how the electromagnetic spectrum can inform the study of the stars in our galaxy (and universe). <b>Is able to recall and apply more than 50% of the GCSE content covered.</b> Or, <b>Is able to recall and apply more than 80% of the KS3 content covered.</b>
Apply*	6	D	4	Plan experiments or devise procedures to make observations, produce or characterise a substance, test hypotheses, check data or explore phenomena. Recognise when to apply a knowledge of sampling techniques to ensure any samples collected are representative. Use an appropriate number of significant figures in calculations.	Explain how variation in organisms can be artificially induced and the effect of these organisms on the environment. Explain how internal and external factors can affect energy transfer in food chains and webs Make links between observed social behaviours and the benefit to the survival of the species. Use one or more models, such as the carbon cycle or food webs, to explain some of the consequences of changes in the environment. <b>Is able to recall and apply more than 40% of the GCSE content covered.</b> Or, <b>Is able to recall and apply more than 70% of the KS3 content covered.</b>	Use a particle model to construct predictions for simple chemical reactions and to produce word equations. Link experimental and numerical data to illustrate a range of patterns in chemical reactions. Use the rock cycle as a model to explain the cyclical nature of rock forming processes and the timescales over which they operate. <b>Is able to recall and apply more than 40% of the GCSE content covered.</b> Or, <b>Is able to recall and apply more than 70% of the KS3 content covered.</b>	Use energy-accounting systems, including Sankey diagrams to track energy transfers. Apply the idea of energy conservation and dissipation to simple biological, chemical and physical systems. Use quantitative measures of energy transfer to support informed decision-making. Recognise how simple quantitative relationships can be applied to the way objects move (including balanced and unbalanced forces). Recognise how simple quantitative relationships can be applied to situations where forces are applied over large and small areas or have a turning effect. Apply models and use scientific data to explain the relative movement of the celestial bodies in the solar system. <b>Is able to recall and apply more than 40% of the GCSE content covered.</b> Or, <b>Is able to recall and apply more than 70% of the KS3 content covered.</b>
	5	E	3	Apply the cycle of collecting, presenting and analysing data, including observation, analysis, interpretation and communication. Recognise the importance of scientific quantities and understand how they are determined. Use prefixes and powers of ten for orders of magnitude (e.g. tera, giga, mega, kilo, centi, milli, micro and nano)	Explain how the organs and tissues in plants and animals function to support the seven life processes in a healthy organism. Explain how variation has benefits and limitations for the survival of organisms in specific habitats. Describe some examples of variation arising from inherited and environmental factors. Explain energy transfer in food chains and webs and relate this to the abundance of organisms. Explain how changes in learned behaviour due to internal and external stimuli are of benefit to the organism. <b>Is able to recall and apply more than 30% of the GCSE content covered.</b> Or,	Apply and use the particle model to describe a range of physical observations. Apply and use the particle model to describe a range of separation techniques. Recognise that materials can be made up of one or more kinds of particles. Describe the type and arrangement of atoms in elements, compounds and mixtures. Describe and develop a particle model to explain the differences between the terms atoms, elements, compounds and mixtures. Describe patterns in a range of chemical reactions. Explain some of the changes that have led to the	Use a simple model of energy transfer to describe common observations. Explain why quantitative measures of energy transfer should also be considered when making informed decisions, e.g. building wind farms. Explain how electricity is generated using a variety of energy resources. Apply ideas about balanced and unbalanced forces to explain the way objects move. Investigate situations where forces are applied over large and small areas or have a turning effect. Recognise that forces at a distance get weaker as the distance increases. Recognise simple ideas of

					<p>Is able to recall and apply more than 60% of the KS3 content covered.</p>	<p>composition of the current atmosphere. Describe the processes involved in the formation of sedimentary, metamorphic and igneous rocks and use the characteristics of the rocks to explain how they formed. Is able to recall and apply more than 30% of the GCSE content covered. Or, Is able to recall and apply more than 60% of the KS3 content covered.</p>	<p>sustainable development. Describe the position of the Earth in relation to the position of other bodies in the solar system and use this to explain some phenomena. Recognise that astronomy and space science provide evidence about the solar system. Is able to recall and apply more than 30% of the GCSE content covered. Or, Is able to recall and apply more than 60% of the KS3 content covered.</p>
Know*	4	F	2	<p>Carry out experiments appropriately having due regard to the correct manipulation of apparatus, the accuracy of measurements and health and safety considerations. Use scientific vocabulary, terminology and definitions. Use SI units (e.g. kg, g, mg; km, m, mm; kJ, J) and IUPAC chemical nomenclature unless inappropriate</p>	<p>Describe the role of organ systems in plants and animals that can contribute to the seven life processes. Describe how organisms can vary and how this may lead to their survival in changing environments. Describe how the major taxonomic groups are classified. Is able to recall and apply more than 20% of the GCSE content covered. Or, Is able to recall and apply more than 50% of the KS3 content covered.</p>	<p>Describe matter using a simple model and use it to explain changes of state. Recognise the link between heating and cooling and changes of state. Use the simple particle model to explain the physical characteristics of solids, liquids and gases. Sort some reactions into reversible and irreversible. Describe, record and group observations from chemical reactions. Describe how natural and human processes have changed the atmosphere over time. Recognise the processes involved in the formation of rocks. Is able to recall and apply more than 20% of the GCSE content covered. Or, Is able to recall and apply more than 50% of the KS3 content covered.</p>	<p>Describe how energy can be stored, e.g. food, fuels and electrical cells. Describe how energy is transferred in simple contexts such as heating and cooling, food chains and simple circuits. Recognise that quantitative measures of energy transfer are needed to inform decisions, e.g. about lifestyles. Recognise the forces acting on an object in different situations. Distinguish between situations involving balanced and unbalanced forces. Recognise that forces can combine or wholly or partly cancel each other out and their size and direction can be represented using arrows. Recognise that there are contact forces and forces that act at a distance. Describe the apparent movement of the Sun across the sky. Is able to recall and apply more than 20% of the GCSE content covered. Or, Is able to recall and apply more than 50% of the KS3 content covered.</p>
	3	G	1	<p>Make and record observations and measurements using a range of apparatus and methods</p>	<p>Use knowledge and understanding of organisms, their behaviour and the environment, to describe similarities, differences and changes in the plants, animals, and non-living things they observe. Use simple scientific ideas with evidence they have collected to give explanations of their observations, linking cause and effect and the ways in which animals or plants are suited to their environments. Recognise and explain the purpose of a variety of scientific and technological developments in their everyday lives, for example medicines helping people get better when they are ill. Is able to recall and apply more than 10% of the GCSE content covered. Or, Is able to recall and apply more than 40% of the KS3 content covered.</p>	<p>Use knowledge and understanding of materials, their properties and the Earth to sort materials into groups in a variety of ways, according to their properties. Explain the ways in which some materials are suited to specific purposes such as glass for windows or copper for electrical cables. Classify changes in materials as reversible, such as water freezing, and non-reversible, such as baking of cakes. Use simple scientific ideas with evidence they have collected to give explanations of their observations, linking cause and effect, for example the evaporation of water. Recognise and explain the purpose of a variety of scientific and technological developments in their everyday lives, for example sustainable packaging. Is able to recall and apply more than 10% of the GCSE content covered. Or, Is able to recall and apply more than 40% of the KS3 content covered.</p>	<p>Use their knowledge and understanding of energy, forces and space to link cause and effect in their observations of the properties and effects of light, sound, forces, and electricity, such as a bulb failing to light because of a break in an electrical circuit, or a push or pull changing the speed or direction of a moving object. Make generalisations such as sounds getting fainter the further the listener is from the source. Use simple scientific ideas with evidence they have collected to give explanations of their observations, linking cause and effect, for example using a switch to turn off a light bulb in an electrical circuit. Recognise and explain the purpose of a variety of scientific and technological developments in their everyday lives, for example streamlining and air resistance. Is able to recall and apply more than 10% of the GCSE content covered. Or, Is able to recall and apply more than 40% of the KS3 content covered.</p>
	2	U	Entry level 3		<p>Is able to recall and apply less than 10% of the GCSE content covered. Or,</p>	<p>Is able to recall and apply less than 10% of the GCSE content covered. Or,</p>	<p>Is able to recall and apply less than 10% of the GCSE content covered. Or,</p>

					Is able to recall and apply more than 30% of the KS3 content covered.	Is able to recall and apply more than 30% of the KS3 content covered.	Is able to recall and apply more than 30% of the KS3 content covered.
	1	U	<b>Entry level 2</b>		Is able to recall and apply more than 20% of the KS3 content covered.	Is able to recall and apply more than 20% of the KS3 content covered.	Is able to recall and apply more than 20% of the KS3 content covered.
	P	U	<b>Entry level 1</b>		Is able to recall and apply less than 20% of the KS3 content covered.	Is able to recall and apply less than 20% of the KS3 content covered.	Is able to recall and apply less than 20% of the KS3 content covered.

\* See Ks3 checklists for more detail of assessment criteria for each of the 20 KS3 topics.

Notes:

KS3:

- KS3 course content will be covered over 40 topics (8 Physics, 6 Biology and 6 Physics). These will be completed by Christmas of Y9.
- Until new assessment resources become available we will use current levelled tasks and topic tests to assess progress. All levels must be converted in to new grades.
- We will rearrange existing resources in to the new topics (with the addition of the new resources).

KS4:

- We will follow the AQA Biology, Chemistry, Physics and Combined Science (Trilogy) courses. Also possibly the Entry Level course, although these students would still need to be entered for the Combined Science exams at the end of Y11.
- We will finish all new teaching by Christmas of Y11 (with the probable exception of Current Y9), to allow time for exam preparation.
- When we have decided on a publisher to resource the course, we need to reorganise our resources and SOW.
- Things to consider,

Mathematical skills - 10% Biology, 20% Chemistry, 30% Physics.

Set practicals- Resourcing, scheduling and recording.

Memorising of equations.