Curriculum Area: Science **Year:** 9
2015/2016

Topics	Year Curriculum	How you can support learning at home, eg. Books, websites, family learning through visits.
Cells	'Cells are the building blocks of life' is a common phrase that is not always appreciated or fully understood. Some pupils may have encountered this idea in primary school or through the media, although it does not form part of the programme of study for Key Stage 2. Pupils know that living organisms feed and grow, and that plants photosynthesise, and should learn about the role of cells in these processes. Understanding what cells do, their requirements, and their specialisation into tissues and organs, helps pupils to understand why complex living organisms are the way they are. It enables them to make greater sense of the organ systems and life processes that they study in some detail at Key Stage 3.	http://www.bbc.co.uk/education/subjects/z4882hv https://www.cgpbooks.co.uk/Student/books_ks3_science http://lettsrevision.com/parents/key-stage-three/ http://www.collinseducation.com/Secondary/Science/Pages/Default.aspx
Forces	In Key Stage 3, pupils need to extend their thinking from concrete examples of forces to a more abstract view. For example, they need to understand that the state of motion of an object depends upon the sum of the forces acting upon it; where the forces balance out, the object will be stationary or moving at constant speed. They should be able to identify the forces acting on an object in simple cases – for example, with a book resting on a table, the upward force of the table on the book, and the downward pull of the Earth's gravity on the book – and to recognise that in this example the forces balance. If pupils associate forces with physical activity and muscular strength, the idea of the table 'pushing up' is a difficult one – they often argue that 'the book is just sitting on the table'. In Key Stage 3, pupils need to decide whether forces are balanced or not. They do not need to identify pairs of forces as in Newton's third law. In the example of the book on the table these are: (a) the pull of the Earth on the book and the pull of the book on the Earth, and (b) the force of the book on the table and the force of the table on the book. Identifying pairs of forces is something that they will do in Key Stage 4.	**http://www.bbc.co.uk/education/subjects/zh2xsbk** https://www.cgpbooks.co.uk/Student/books_ks3_science http://lettsrevision.com/parents/key-stage-three/ http://www.collinseducation.com/Secondary/Science/Pages/Default.aspx
Energy	Energy is a powerful and unifying abstract idea which is difficult to define. It allows pupils to explain a range of physical phenomena, to account for what happens in biological, chemical, geological and physical processes, and to make predictions.	http://www.bbc.co.uk/education/subjects/zh2xsbk https://www.cgpbooks.co.uk/Student/books_ks3_science http://lettsrevision.com/parents/key-stage-three/ http://www.collinseducation.com/Secondary/Science/Pages

	Pupils need to understand that energy allows us to keep track of change. Early in the key stage, teach pupils about energy resources, the use of fuels and the need to conserve them, and about how energy can be transferred from one place to another. A simple model for energy transfer can help pupils to appreciate the idea of energy conservation.	/Default.aspx
Particles	The particle theory of matter is the abstract idea that helps pupils to develop their understanding of why materials behave as they do. It gives pupils a new insight into how the nature and behaviour of materials can be explained in a range of contexts. Some pupils may have encountered this idea in primary school or through the media, although it does not form part of the programme of study in Key Stage 2.	http://www.bbc.co.uk/education/subjects/znxtyrd http://www.bbc.co.uk/education/subjects/zh2xsbk https://www.cgpbooks.co.uk/Student/books_ks3_science http://lettsrevision.com/parents/key-stage-three/ http://www.collinseducation.com/Secondary/Science/Pages/Default.aspx
Ecological relationships	As pupils learn about other parts of the world, they begin to understand that the Earth is not a group of discrete parts but a continuous environment where activities in one place may produce effects far away. They start to appreciate how this continuum exists over time as well as place. The idea of interdependence in and between biological and physical environments is fundamental. Although links are sometimes slender, humans depend on and affect living organisms and their physical environment.	https://www.cgpbooks.co.uk/Student/books_ks3_science http://lettsrevision.com/parents/key-stage-three/ http://www.collinseducation.com/Secondary/Science/Pages/Default.aspx