KS3 Science – Year 8

	Topics Covered	Common Assessed Pieces (CAPS)
YEAR 8 AUTUMN TERM **Weeks – 1- 15** **5 Sept – 21 Dec 2018**	**Topic 2.1** **Forces** begins by exploring situations in which forces are in opposition, such as the actions of friction and drag in opposing movement, and then explores Hooke's Law, developing a more quantitative approach. Pupils will then consider pressure both in relation to solids and fluids, developing explanations around applications such as floating and sinking and using calculations to work out pressure. **Topic 2.2** **Electromagnets-** Pupils will start by investigating magnets and magnetic fields. It builds on pupils' prior knowledge both of magnets and of non-contact forces. It explores the idea of a field, considers how we can describe it and how its strength varies. The field produced by a bar magnet is compared and contrasted with that of the Earth. **Topic 2.8** **Organisms-**Pupils will learn about the human breathing system and the digestive system; the role of each of the organs involved; and the way that each organ is adapted to its particular function. They will learn more about the effects of some lifestyle choices and diseases on the breathing system and about the importance of a healthy diet, and the consequences of not having one. They will also learn about the links between the digestive system, breathing system and circulatory system, and study how the products of digestion and breathing are exchanged in our bodies. This topic offers the opportunity for pupils to use and evaluate models of the digestive system and the breathing system. They will also analyse and evaluate primary and secondary data linked to digestion and breathing. **Topic 2.9** **Ecosystems-**Pupils will learn about the ways in which we generate energy in our body. They will learn about aerobic respiration and how it relies on breathing to provide oxygen, and on digestion to provide glucose as a reactant. They will learn that the process takes place in mitochondria, and will consider how these organelles are adapted to this function. The pupils will also learn about anaerobic respiration. The reactants and products of each type of respiration will be compared, as well as the amount of energy released in each process. Pupils	Pupils will be assessed by an end of topic test following the completion of each topic. **CAP1** will be an average mark calculated from end of topic tests 2.1 + 2.2 **CAP2** will be an average mark calculated from end of topic tests 2.8 + 2.9

	will learn about situations where each type of respiration takes place and also about the process of photosynthesis and the factors that affect it. They will study the movement of water and minerals through plants, and the effects of mineral deficiencies on their growth. Pupils will also learn about the adaptations in plants that allow them to carry out their life processes effectively. This chapter offers a number of opportunities for pupils to plan investigations, for example in investigating the factors that affect photosynthesis. They have the opportunity to analyse data, including the both primary and secondary data. Pupils are encouraged to develop scientific explanations: for example, to explain how a chosen factor affects anaerobic respiration. They will also consider risks and identify control measures in the context of testing leaves for starch.	
YEAR 8 SPRING TERM **Weeks –16-27** **7 Jan - 5 April 2019**	**Topic 2.3** **Energy-**This topic builds on an exploration and application of energy. It explores concepts such as work, thermal energy and energy transfer. It develops the idea that when things happen, they don't happen because energy has been transferred – but the model of transfer is a useful way of describing what has happened. **Topic 2.4** **Waves-**In this topic, pupils will learn about and compare the properties of waves in water and light waves and how they transfer energy. They will learn that light consists of transverse waves with a range of frequencies and wavelengths, and that white light can be split into a spectrum of colours. The pupils will also learn about the reflection, refraction and absorption of light by materials. This chapter offers the opportunity for pupils to use and evaluate models to explain the properties of light in terms of waves.It is important that pupils develop both an understanding of the generic characteristics of waves and also specific characteristics of light and sound. **Topic 2.7** **The Earth-**In this chapter, pupils will learn about the composition of the Earth's atmosphere, how it has evolved and what caused it to change. They will learn how human activities can damage and limit the Earth's resources, including the atmosphere. Pupils will explore how these changes affect the Earth and all life on it. Natural recycling and the recycling of waste materials are considered. This chapter offers a number of opportunities for pupils to model processes and to evaluate the usefulness of the models. They undertake a range of investigations into the amount of oxygen in the atmosphere, the effect of human activities on plant growth, and recycling materials.	Pupils will be assessed by an end of topic test following the completion of each topic. **CAP3** will be an average mark calculated from end of topic tests 2.3 + 2.4 **CAP4** will be the end of topic test 2.7

YEAR 8 SUMMER TERM **Weeks – 28- 39** **23 April- 23 July 2019**	**Topic 2.5** **Matter-** Pupils will learn about the ideas of atoms, elements and compounds, and ways that scientists represent them using symbols and formulas. They will learn how scientists have developed the periodic table, and will start to learn about its groups, patterns and trends. Various groups of elements are explored, such as Group 1 metals, the halogens and the noble gases, with regard to their different chemical and physical properties. Pupils will learn how to understand chemical reactions in terms of a rearrangement of atoms and how to represent these using circle diagrams, formulas and equations. Finally, pupils will learn about the structure, properties and uses of new materials, including ceramics, polymers and composites. **Topic 2.6** **Reactions**-Pupils will consider energy changes in chemical reactions using an understanding of bond making and bond breaking. They will explain why exothermic and endothermic changes take place and how these can be usefully applied. They will be introduced to the idea of catalysts and how they can change the rate of chemical reactions. Pupils will study combustion and thermal decomposition as examples of chemical reactions. They will consider the differences between the two reactions, and the applications of each. Pupils develop the skill of representing reactions by word equations and use a particle model to support this. This particle model is then applied to the Law of Conservation of Mass. This topic provides several opportunities to carry out chemical reactions and to make detailed observations. The pupils will plan investigations, including identifying a suitable range and intervals. They will also consider how to present data and analyse their findings to make conclusions. **Topic 2.10** **Genes-**In this topic, pupils learn what is meant by biodiversity, and will learn why it is important. They will learn how variation drives natural selection, and will consider the theory of Charles Darwin in more depth. Pupils will explore the structure of chromosomes, genes and DNA, and will investigate their importance in the inheritance of characteristics. They will also consider how scientists compete and collaborate to make new discoveries, for example in the discovery of the structure of DNA. This chapter offers a number of opportunities for pupils to review theories, such as a theory to explain why and how dinosaurs became extinct. Pupils have the opportunity to investigate the use	Pupils will be assessed by an end of topic test following the completion of each topic. **CAP5** will be an average mark calculated from end of topic tests 2.5 + 2.6 Pupils will also sit an end of year exam covering all the content covered in year 8(GL assessment)

	of models to help develop explanations, for example to explain inheritance of a specific characteristic, and to research and evaluate evidence.	