SUBJECT:	Science	YEAR GROUP:	8

PURPOSE OF STUDY

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

THE NATIONAL CURRICULUM FOR ART AND DESIGN AIMS TO ENSURE THAT ALL PUPILS:	NATIONAL CURRICULUM LINKS
• develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics • develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them • are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future	• Maths - Working out the mass of chemicals. • Working out energy and measuring for experiments • English - Evaluating skills when writing up experiments. • IT- researching using technology.

TOPICS COVERED:

- Biomechanics
- Nutrition and Digestion
- Health – drug misuse
- Structure of the Earth
- Light and Sound
- Respiration
- Cellular respiration
- Chemical Reactions
- Particle Theory and The Periodic Table
- Physical changes
- Waves

INTENT OF SUBJECT:

In Year 8, pupils will be able to develop their knowledge and understanding on Biology, Chemistry and Physics. This will focus on looking at Nutrition need by our bodies and the Digestive system, alongside the effects of different drugs (alcohol, nicotine) on our bodies and what happens if we misuse them. Following on we will be looking at the Structure of the Earth, looking at the different layers that make up the Earth and how it affects the wat that land and sea are in everyday life. Light and Sound will explore the way that each can affected by the local environment and look at topics including refraction. Respiration and Cellular respiration looks at how the body works, takes in oxygen, but also how energy is released and processed by the chemical reactions that are involved in helping our body top function, and also including looking at how the lungs work. Chemical Reactions and Physical Changes look at how atoms can be rearranged and the reactions through formulae and equations. Physical Changes looks at Brownian Motion and the differences in solids, liquids and gases and their conversion between different states. Finally, Particle Theory looks at physical and chemical properties of different elements. We will explore the Periodic Table through periods and groups, and metals and non-metals. The Waves topic explores different kinds of Waves from Observed, Sound, Light and also energy in Waves.

SKILLS OVERVIEW BY HALF TERM:	
AUTUMN ONE	**AUTUMN TWO**
• the interaction between skeleton and muscles • the function of muscles • content of a healthy human diet • minerals, dietary fibre and water, and why each is needed • calculations of energy requirements in a healthy daily diet • the consequences of imbalances in the diet • the tissues and organs of the human digestive system • Knowing the importance of bacteria in the human digestive system • Knowing how plants making carbohydrates in their leaves by photosynthesis • Knowing the effects of recreational drugs	• Understand the composition and structure of the Earth • Understand the rock cycle and the formation of igneous, sedimentary and metamorphic rocks • Know the carbon cycle • Understand the composition of the atmosphere • Understand the production of carbon dioxide by human activity • Understand the use of ray model • Understand that light transfers energy • Know that light has different frequencies
SPRING ONE	**SPRING TWO**
• Understanding the structure and functions of the gas exchange system in humans	• Understand chemical reactions as the rearrangement of atoms • Know how to represent chemical reactions using formulae and equations

• Understand the mechanism of breathing • Explain the movement of gases • Know the impact of exercise, asthma and smoking on the human gas exchange system • Know the role of leaf stomata in gas exchange in plants • Understand properties of material and of mass, and reversibility, in melting, freezing, evaporation, sublimation, condensation, dissolving • Know similarities and differences, including density differences, between solids, liquids and gases • Understand Brownian motion in gases • Know that diffusion in liquids and gas is driven by differences in concentration • Know the difference between chemical and physical changes Particle model • Know the differences in arrangements, in motion and in closeness of particles • Understand changes with temperature in motion and spacing of particles	• Understand about combustion, thermal decomposition, oxidation and displacement reactions
SUMMER ONE	**SUMMER TWO**
• Understand aerobic and anaerobic respiration in living organisms • Use a word summary for aerobic and anaerobic respiration • Understand the process of anaerobic respiration in humans and micro-organisms • Know the differences between aerobic and anaerobic respiration in terms of the reactants • the varying physical and chemical properties of different elements • Understand the principles underpinning the Mendeleev Periodic Table • Understand the Periodic Table: periods and groups; metals and non-metals • Know how patterns in reactions can be predicted with reference to the Periodic Table • Understand the properties of metals and non-metals • Know the chemical properties of metal and non-metal oxides with respect to acidity	• Explore the varying physical and chemical properties of different elements • Understand the principles underpinning the Mendeleev Periodic Table • Know he Periodic Table: periods and groups; metals and non-metals • Understand how patterns in reactions can be predicted using the Periodic Table • Know the properties of metals and non-metals • Understand the chemical properties of metal and non-metal oxides with respect to acidity • waves on water as undulations which travel through water with transverse motion; these waves can be reflected, and add or cancel – superposition. • Know that frequencies of sound wave are measured in hertz (Hz) • Understand how sound needs a medium to travel • Know the speed of sound in air, in water, in solids • Explore auditory range of humans and animals. • Understand pressure waves as ultrasound • Know that sound waves can transfer to electrical signals

	• Know the similarities and differences between light waves and waves in matter • Explore light waves travelling through a vacuum