

Curriculum Plan

Department/subject: Science Year 8

Our Vision: **We take opportunities and aspire to excellence**

Our Intent:

- All students will experience a curriculum richness, breadth and depth
- The curriculum equips every student with the knowledge and skills for the future in our local area and beyond
- The curriculum builds on prior knowledge and creates a ‘web of knowledge’
- Gaps in knowledge and skills are identified and addressed quickly

Year	Autumn 1	Autumn 2
Knowledge to be taught	<p><u>Unit 1 – Reproduction, Nutrition and Digestion</u></p> <ul style="list-style-type: none"> ● The menstrual cycle prepares the female for pregnancy and stops if the egg is fertilised by a sperm. ● The developing foetus relies on the mother to provide it with oxygen and nutrients; to remove waste and protect it against harmful substances. ● The menstrual cycle lasts approximately 28 days. ● If an egg is fertilised it settles into the uterus lining. ● Explain whether substances are passed from the mother to the foetus or not. ● Use a diagram to show stages in development of a foetus from the production of sex cells to birth. ● Describe causes of low fertility in male and female reproductive systems. ● Identify key events on a diagram of the menstrual cycle. ● Explain why pregnancy is more or less likely at certain stages of the menstrual cycle. ● Make deductions about how contraception and fertility treatments work. ● Predict the effect of a mother taking cigarettes, alcohol or drugs on the developing foetus. ● Plants have adaptations to disperse seeds using wind, water or animals. 	<p><u>Unit 2 – Environmental Science</u></p> <ul style="list-style-type: none"> ● Recognise that air is made up of a mixture of different substances. ● Describe the composition of air. ● Name the substances that may be found in polluted air. ● Recognise that not all air pollution is visible. ● Recognise that air pollutants can move away from their source. ● Identify more than one location of evaporation. ● Explain the formation of clouds. ● Describe where groundwater is located ● Predict the permeability of a rock based on information about its structure. ● Critique a representation of the water cycle. ● Recognise that the source of pollutants causing acid rain may be a long way from where the acid rain falls. ● Identify sources of pollution that may cause acid rain. ● Name pollutants that can cause acid rain. ● Recognise that pollutants can undergo chemical reactions in the atmosphere. ● Explain the formation of acid rain in terms of the chemical reaction between substances in the atmosphere. ● Recognise that energy is conserved during an exothermic reaction.

	<ul style="list-style-type: none"> ● Plants reproduce sexually to produce seeds, which are formed following fertilisation in the ovary. ● Flowers contain the plant's reproductive organs. ● Pollen can be carried by the wind, pollinating insects or other animals. ● Describe the main steps that take place when a plant reproduces successfully. ● Identify parts of the flower and link their structure to their function. ● Suggest how a plant carried out seed dispersal based on the features of its fruit or seed. ● Explain why seed dispersal is important to survival of the parent plant and its offspring. ● The body needs a balanced diet with lipids, proteins, vitamins, minerals, dietary fibre and water, for its cells' energy, growth and maintenance. ● Organs of the digestive system are adapted to break large food molecules into small ones which can travel in the blood to cells and are used for life processes. ● Iron is a mineral important for red blood cells. ● Calcium is a mineral needed for strong teeth and bones. ● Vitamins and minerals are needed in small amounts to keep the body healthy. ● Describe possible health effects of unbalanced diets from data provided. ● Calculate food requirements for a healthy diet, using information provided. ● Describe how organs and tissues involved in digestion are adapted for their role. ● Describe the events that take place in order to turn a meal into simple food molecules inside a cell. 	<ul style="list-style-type: none"> ● Describe how the temperature of the chemicals will change with time after an exothermic reaction. ● Describe how the temperature of the chemicals will change with time after an endothermic reaction. ● Explain the energy changes needed for the rearrangement (breaking apart and combining) of atoms during a chemical reaction. ● Recognise that the overall energy change of a chemical reaction depends on the relative amount of energy needed to separate and combine atoms. ● Explain the appearance of bubbles when bicarbonate of soda reacts with vinegar. ● Explain what happens when an acid appears to 'eat away' a material. ● Suggest evidence that an acid has reacted with an alkali. ● Predict the pH at the end of a reaction between an acid and an insoluble base. ● Describe the end point of a reaction between a strong acid and a strong alkali. ● Describe how to find out, safely, whether a solution is an acid. ● Identify and give examples of alkalis. ● Describe what information an indicator provides. ● Interpret the pH scale. ● Compare acidity or alkalinity using the pH scale.
Keywords	<ul style="list-style-type: none"> ● Gamete ● Fertilisation ● Ovary 	<ul style="list-style-type: none"> ● Acid ● Alkali ● Exothermic

	<ul style="list-style-type: none"> ● Enzyme ● Digestion ● Intestine ● Carbohydrate ● Protein ● Fat 	<ul style="list-style-type: none"> ● Endothermic ● Pollution ● Environment ● Erosion ● Watercycle ● pH ● Neutralisation
Links to prior knowledge	In KS2 students learn about plants and animals including their lifecycles and how they reproduce this unit expands upon these ideas.	In KS2 students learn about animals and their habitats, and the properties of everyday materials.
How knowledge is assessed	<ul style="list-style-type: none"> ● An end of unit test will cover the main ideas in the topic. This will be marked by the teacher and a feedback lesson will go over the assessment in detail. ● Green pens are used for self and peer assessment to build up students' understanding of their own misconceptions and ideas. ● Homework tasks via Show My Homework. 	<ul style="list-style-type: none"> ● An end of unit test will cover the main ideas in the topic. This will be marked by the teacher and a feedback lesson will go over the assessment in detail. ● Green pens are used for self and peer assessment to build up students' understanding of their own misconceptions and ideas. ● Homework tasks via Show My Homework.
How gaps will be addressed	<ul style="list-style-type: none"> ● Gaps in knowledge will be identified by any of the strategies above. ● Formally marked work will require a response from the student and subsequent work in lessons will link back to the areas of need. ● End of unit test feedback to require one lesson dedicated to addressing gaps in knowledge and exam skills 	<ul style="list-style-type: none"> ● Gaps in knowledge will be identified by any of the strategies above. ● Formally marked work will require a response from the student and subsequent work in lessons will link back to the areas of need. ● End of unit test feedback to require one lesson dedicated to addressing gaps in knowledge and exam skills
Cultural capital lessons	Personal: Puberty and the changes to the human body during adolescence.	Personal: Impact of fossil fuels on the environment. Moral: Green Chemistry and the use of resources.