Year 7 Science Curriculum: Biology

	Aut	Spr	Sum
Topic:	**Biology: Organisms – Movement and Cells**	**Biology: Ecosystems –Interdependence and plant reproduction**	**Biology: Genes – Variation and human reproduction**
Knowledge covered:	AQA Science KS3 Syllabus The parts of the human skeleton work as a system for support, protection, movement and the production of new blood cells. Antagonistic pairs of muscles create movement when one contracts and the other relaxes Multicellular organisms are composed of cells which are organised into tissues, organs and systems to carry out life processes. There are many types of cell. Each has a different structure or feature so it can do a specific job.	AQA Science KS3 Syllabus Organisms in a food web (decomposers, producers and consumers) depend on each other for nutrients. So, a change in one population leads to changes in others. The population of a species is affected by the number of its predators and prey, disease, pollution and competition between individuals for limited resources such as water and nutrients. Plants have adaptations to disperse seeds using wind, water or animals. Plants reproduce sexually to produce seeds, which are formed following fertilisation in the ovary	AQA Science KS3 Syllabus There is variation between individuals of the same species. Some variation is inherited, some is caused by the environment and some is a combination. Variation between individuals is important for the survival of a species, helping it to avoid extinction in an always changing environment. 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.
Online Resources:	**Biology: Organisms – Movement and Cells** Kerboodle online textbook; username and password provided to students (please contact Miss Sarah Golley if it needs to be reissued) Oak Academy online resources: https://classroom.thenational.academy/subjects-by-year/year-7/subjects/science https://classroom.thenational.academy/subjects-by-year/year-8/subjects/science BBC bitesize: https://www.bbc.co.uk/bitesize/subjects/z4882hv	**Biology: Ecosystems –Interdependence and plant reproduction** Kerboodle online textbook; username and password provided to students (please contact Miss Sarah Golley if it needs to be reissued) Oak Academy online resources: https://classroom.thenational.academy/subjects-by-year/year-7/subjects/science https://classroom.thenational.academy/subjects-by-year/year-8/subjects/science BBC bitesize: https://www.bbc.co.uk/bitesize/subjects/z4882hv	**Biology: Genes – Variation and human reproduction** Kerboodle online textbook; username and password provided to students (please contact Miss Sarah Golley if it needs to be reissued) Oak Academy online resources: https://classroom.thenational.academy/subjects-by-year/year-7/subjects/science https://classroom.thenational.academy/subjects-by-year/year-8/subjects/science BBC bitesize: https://www.bbc.co.uk/bitesize/subjects/z4882hv Specimen drawing award:

	Chat with real scientists online https://imascientist.org.uk/ Biology week resources from RSB: https://www.rsb.org.uk/get-involved/biologyweek	Resources to support above suggestion: https://www.opalexplorenature.org/learning	https://www.rsb.org.uk/get-involved/rsb-awards/nancy-rothwell-award

Year 7 Science Curriculum: Chemistry

	Aut	Spr	Sum
Topic:	**Chemistry: Particle model & Separating mixtures**	**Chemistry: Metals and Non-metals, Acids and Alkalis.**	**Chemistry: Earth Structure & universe**
Knowledge covered:	Properties of solids, liquids and gases can be described in terms of particles in motion but with differences in the arrangement and movement of these same particles: closely spaced and vibrating (solid), in random motion but in contact (liquid), or in random motion and widely spaced (gas). Observations where substances change temperature or state can be described in terms of particles gaining or losing energy A pure substance consists of only one type of element or compound and has a fixed melting and boiling point. Mixtures may be separated due to differences in their physical properties. The method chosen to separate a mixture depends on which physical properties of the individual substances are different.	Metals and non-metals react with oxygen to form oxides which are either bases or acids. Metals can be arranged as a reactivity series in order of how readily they react with other substances. Some metals react with acids to produce salts and hydrogen. The pH of a solution depends on the strength of the acid: strong acids have lower pH values than weak acids. Mixing an acid and alkali produces a chemical reaction, neutralisation, forming a chemical called a salt and water.	Sedimentary, igneous and metamorphic rocks can be inter converted over millions of years through weathering and erosion, heat and pressure, and melting and cooling. The solar system can be modelled as planets rotating on tilted axes while orbiting the Sun, moons orbiting planets and sunlight spreading out and being reflected. This explains day and year length, seasons and the visibility of objects from Earth. Our solar system is a tiny part of a galaxy, one of many billions in the Universe. Light takes minutes to reach Earth from the Sun, four years from our nearest star and billions of years from other galaxies.
Online Resources:	**Chemistry: Particle model and separating mixtures:**	**Chemistry: Metals and Non-metals, Acids and Alkalis.**	**Chemistry: Earth Structure & Universe**

	Kerboodle online textbook; username and password provided to students (please contact Miss Sarah Golley if it needs to be reissued) Oak Academy online resources: https://classroom.thenational.academy/subjects-by-year/year-7/subjects/science https://classroom.thenational.academy/subjects-by-year/year-8/subjects/science BBC bitesize links: https://www.bbc.co.uk/bitesize/guides/zgvc4wx/revision/1 https://www.bbc.co.uk/bitesize/guides/z2wmxnb/revision/1 RSC/Salters Institute competition: https://www.saltersinstitute.co.uk/festivals/	Kerboodle online textbook; username and password provided to students (please contact Miss Sarah Golley if it needs to be reissued) Oak Academy online resources: https://classroom.thenational.academy/subjects-by-year/year-7/subjects/science https://classroom.thenational.academy/subjects-by-year/year-8/subjects/science BBC bitesize links: https://www.bbc.co.uk/bitesize/guides/z84wjxs/revision/4	Kerboodle online textbook; username and password provided to students (please contact Miss Sarah Golley if it needs to be reissued) Oak Academy online resources: https://classroom.thenational.academy/subjects-by-year/year-7/subjects/science https://classroom.thenational.academy/subjects-by-year/year-8/subjects/science Rocks/Geology resources: https://www.sciencekids.co.nz/geology.html IOP resources: https://www.iop.org/activity/outreach/resources/pips/topics/earth/index.html#gref Royal Society Christmas lectures: how to survive in space: https://www.rigb.org/christmas-lectures/watch/2015/how-to-survive-in-space

Year 7 Science Curriculum: Physics

	Aut	Spr	Sum
Topic:	**Physics: Energy –Costs and Transfers**	**Physics: Waves - Sound and Light**	**Physics Forces: Speed and Gravity**
Knowledge covered:	We pay for our domestic electricity usage based on the amount of energy transferred. Electricity is generated by a combination of resources which each have advantages and disadvantages. Calculate the cost of home energy usage, using the formula: cost = power (kW) x time (hours) x price (per kWh).	Sound consists of vibrations which travel as a longitudinal wave through substances. The denser the medium, the faster sound travels. The greater the amplitude of the waveform, the louder the sound. The greater the frequency	If the overall, resultant force on an object is non-zero, its motion changes and it slows down, speeds up or changes direction. Mass and weight are different but related. Mass is a property of the object; weight depends upon mass but also on gravitational field strength. Every object exerts a gravitational force on every other

	We can describe how jobs get done using an energy model where energy is transferred from one store at the start to another at the end. When energy is transferred, the total is conserved, but some energy is dissipated, reducing the useful energy.	When a light ray meets a different medium, some of it is absorbed and some reflected. For a mirror, the angle of incidence equals the angle of reflection. The ray model can describe the formation of an image in a mirror and how objects appear different colours. When light enters a denser medium it bends towards the normal; when it enters a less dense medium it bends away from the normal. Refraction through lenses and prisms can be described using a ray diagram as a model.	object. The force increases with mass and decreases with distance. Gravity holds planets and moons in orbit around larger bodies.
Online Resources:	**Physics: Energy –Costs and Transfers** Kerboodle online textbook; username and password provided to students (please contact Miss Sarah Golley if it needs to be reissued) Oak Academy online resources: https://classroom.thenational.academy/subjects-by-year/year-7/subjects/science https://classroom.thenational.academy/subjects-by-year/year-8/subjects/science Phet simulations: **Phet Skatepark Sim** **Phet energy stores and transfers sim**	**Physics: Waves - Sound and Light** Kerboodle online textbook; username and password provided to students (please contact Miss Sarah Golley if it needs to be reissued) Oak Academy online resources: https://classroom.thenational.academy/subjects-by-year/year-7/subjects/science https://classroom.thenational.academy/subjects-by-year/year-8/subjects/science Phet simulations: Phet colour vision sim	**Physics Forces: Speed and Gravity** Kerboodle online textbook; username and password provided to students (please contact Miss Sarah Golley if it needs to be reissued) Oak Academy online resources: https://classroom.thenational.academy/subjects-by-year/year-7/subjects/science https://classroom.thenational.academy/subjects-by-year/year-8/subjects/science Phet simulations: Phet moving man sim