The Wilnecote School: Our Curriculum

The Wilnecote School
ENSURING EXCELLENCE

Key Stage 3

Year group:	Topics covered:
Year 7	There are 6 topics delivered in Y7: The Olympics; Forensics; Hospitals; Ancient Worlds; Going to Mars, Oceans. The topics have been mapped against the Best Evidence Science Teaching structure to ensure the best possible sequencing of knowledge. The Olympics, Forensics and Hospitals are taught in the first half of Y7 with Ancient Worlds, Going to Mars and Oceans delivered in the second half.
Forensics	
Knowledge	C3/C6 I can list the main parts of cells (cell wall, cell membrane, nucleus, vacuole, mitochondria and chloroplasts) and identify them from a diagram. C12 I can describe the functions of the main parts of cells, including the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplasts. C10 I can describe the structural adaptations of some animal and plant cells. C14 I can compare and contrast animal and plant cells. I2/ I5 I can state that variation occurs within and between species, and I can describe how variation is caused by inherited and environmental factors. PI10 I can explain how mixtures are different from elements and compounds PI11 I can describe dissolving, with reference to particles. DM5 I can calculate the average speed of an object. F20 I can calculate a resultant force. C9/C13 I can describe a tissue, an organ and an organ system and describe how multicellular organisms are organised.
Skills	Extended Investigation: Investigate how the gradient of a ramp affects the speed of an object rolling down it
Assessment	Knowledge assessed in formative tests and RAG rates against Doddle Steps. Assessment followed by ACTS lesson to secure knowledge Skills assessment marked against specified criteria for the investigation indicated on the front of the investigation log book
The Olympics	
Knowledge	S2/S3 I can identify and describe the functions of the parts of the skeletal and muscular system. D1/D4 I can explain how the skeletal and muscular systems work together, including antagonistic pairs. G2/G4 I can state what happens to the air, ribs and diaphragm during breathing and describe changes in lung volume. G7 I can describe the impact of exercise, asthma and smoking on the human gas exchange system. A6 I can represent elements using chemical symbols. A9 I can represent compounds using chemical formulae. F9 I can describe forces in terms of deforming and stretching objects. F13 I can identify if a particular force is contact or non- contact (including gravity, magnetism and static electricity) F5/ F14/F19 I can describe friction. I can explain ways of reducing or increasing friction and discuss some applications of friction.

Skills	Extended Investigation: Streamlining - How does the shape of an object affect how it moves through a fluid
Assessment	Knowledge assessed in formative tests and RAG rates against Doddle Steps. Assessment followed by ACTS lesson to secure knowledge Skills assessment marked against specified criteria for the investigation indicated on the front of the investigation log book
Hospitals	
Knowledge	R1/ R3 I can name and describe the functions of some tissues and organs in the human reproductive systems. R5 I can describe the stages of pregnancy and birth. R6 I can describe the stages of the menstrual cycle. R8 I can explain how gametes are involved in fertilisation. R11 I can discuss the impact of maternal lifestyle on the foetus. R12 I can make links between the menstrual cycle, fertilisation and infertility problems. R100 I can describe puberty in terms of changes to the body. R101 Explain the role of hormones in changes to the body during puberty. CH8/CH9 I can describe neutralisation, combustion, thermal decomposition, oxidation, displacement and the reaction of metals and acids, as examples of chemical reactions. CH3/ CH10 I can state the purpose of an indicator and describe how Universal indicator is used to find the strength of an acid or alkali using the pH scale. CH11 I can represent chemical reactions using word equations. SW5/ SW6/ SW8/ SW9 I can describe what frequency is and state that it is measured in hertz. I can state the auditory range of humans and name some animals that have different auditory ranges to humans. SW12/SW14 I can describe the reflection of a sound wave as an echo and describe some applications of echoes, including sonar, ultrasound and echolocation. LW 11/ LW12 I can label and state the functions of the main parts of the human eye: cornea, pupil, iris, lens, retina, optic nerve LW22 I can describe how the human eye forms an image using ray diagrams.
Skills	Extended Investigation: Neutralisation – which indigestion tablet is the most effective
Assessment	Knowledge assessed in formative tests and RAG rates against Doddle Steps. Assessment followed by ACTS lesson to secure knowledge Skills assessment marked against specified criteria for the investigation indicated on the front of the investigation log book
Ancient Worlds	
Knowledge	P1/ P3 I can state that plants make carbohydrates in their leaves by photosynthesis and gain mineral nutrients and water from the soil via their roots I3 I can state that due to variation, some individuals within a species will compete more successfully. I8 I can describe how more successful competition can result in extinction. I11 I can explain how variation and environmental pressures can drive natural selection and lead to evolution. PT4/ PT7 I can state that the periodic table is arranged in periods and groups and I can identify these, as well as metals and non-metals, in the periodic table.

	MG7/ MG8/MG9 I can draw the field lines surrounding a bar magnet and add arrows to show their direction. I can label the north- and south- seeking poles of a magnet when given the field lines or details about repulsion or attraction. MG11 I can describe the Earth and compasses as examples of magnets. MG12/ MG15 I can describe the relationship between strength and the distance between field lines, and I can describe how to find the shape of a magnetic field. MG18 I can describe how magnetism maybe induced. MG20 I can describe and explain attraction and repulsion in terms of direction of field lines MG21 I can explain why the geographical North Pole of the Earth is actually a magnetic south pole.
Skills	Extended Investigation: Photosynthesis – investigate the effect of different light conditions on the rate of photosynthesis
Assessment	Knowledge assessed in formative tests and RAG rates against Doddle Steps. Assessment followed by ACTS lesson to secure knowledge Skills assessment marked against specified criteria for the investigation indicated on the front of the investigation log book
Going to Mars	
Knowledge	PM8 I can explain the properties of the three states of matter with reference to the particle model. PM2/PM3 I can list the changes of states and describe how they may occur. SP5 I can state that gravitational forces between objects are always attractive, and act from their centres. SP20 I can describe how the gravitational field strength of an object changes due to the size (mass) of an object. SP11/ SP16 I can describe a solar system as a collection of planets and other objects orbiting a star and I can list planets in our solar system in order. SP23 I can explain that our Sun is a star, and that there are other stars and solar systems in our galaxy and other galaxies in the Universe.
Skills	Extended Investigation: Momentum – Investigate how the fuel level affects the efficiency of a rocket
Assessment	Knowledge assessed in formative tests and RAG rates against Doddle Steps. Assessment followed by ACTS lesson to secure knowledge Skills assessment marked against specified criteria for the investigation indicated on the front of the investigation log book
Oceans	
Knowledge	RE1/RE2 I can state that all organisms in an ecosystem may affect each other and are affected by their environment, and I can describe how a change in the numbers of one organism may affect another. RE7 I can explain how a change in the numbers of one organism may affect another, with reference to competition and predation. RE3 I can construct and interpret simple food chains. RE6 I can construct and interpret food webs. OW1/OW3 I can state that waves transfer energy. I can state that waves may be reflected, refracted, dispersed or experience superposition. OW2/ OW4 I can state that different types of waves can travel through matter and vacuums, and I can name some types of waves including water waves, sound waves, pressure waves and light waves. OW5 I can describe the reflection of an observed wave in water. EA4/EA10/EA15 I can list and describe the parts that make up the Earths structure, and label these parts on a diagram.

	EA7/ EA16 I can name the three different types of rocks and describe how these are formed. EA21 I can explain in detail how the three different types of rock are formed, with reference to factors that may alter the appearance and properties of these rocks. EA23 I can link the formation of rocks together to describe and explain the rock cycle in detail.
Skills	Extended Investigation: Solubility – Investigate the effect of temperature on the solubility of salt in water
Assessment	Knowledge assessed in formative tests and RAG rates against Doddle Steps. Assessment followed by ACTS lesson to secure knowledge Skills assessment marked against specified criteria for the investigation indicated on the front of the investigation log book
Year 8	The six topics delivered in Y8 are: Astronaut School; At Home; Living in the Arctic; The Zoo; Going on Holiday; The Alchemist. The topics are again sequenced based on the BEST structure. Astronaut School, At Home and Living in the Arctic are delivered in the first half of the year. The Zoo, Going on Holiday and The Alchemist are delivered in the second half
Astronaut School	
Knowledge	G10 I can explain how ventilation occurs with reference to pressure changes and measuring lung volume. E15/E19 I can describe and explain how thermal energy is transferred by convection in terms of particles. E16/E18 I can describe and explain how thermal energy is transferred by radiation, in terms of particles. E13/E20 I can describe and explain the expansion of heated materials. E23 I can suggest why thermal insulators reduce thermal energy transfer. SP6/SP7/ SP9 I can state that gravitational force is a non-contact force that affects objects within a gravitational field. I can state that all objects have a gravitational field. SP101 I can describe what happens to gravity as two things get further apart. SP102 Describe the relationship between weight, gravitational field strength and mass. SP103 I can describe the difference between mass and weight. SP21/SP26 I can explain that the movement of light is measured in light years, and that this is how far light travels in one year. I can describe that this is a measurement. MA11 I can explain the following physical changes in terms of conservation of material, mass and reversibility: melting, freezing, sublimation, condensation. MA3/MA4/MA8 I can describe ways in which energy is stored, including describing chemical, gravitational and elastic as forms of potential energy. MA14 I can interpret block and Sankey diagrams.
Skills	Extended Investigation: Heat transfer – Investigate the effect of different levels of insulation on the cooling of water.
Assessment	Knowledge assessed in formative tests and RAG rates against Doddle Steps. Assessment followed by ACTS lesson to secure knowledge Skills assessment marked against specified criteria for the investigation indicated on the front of the investigation log book
At Home	
Knowledge	PI4/PI8 I can describe pure substances and mixtures, including dissolved substances.

	PI6 I can describe how impurities may affect boiling and melting points of impure substances EA22 I can discuss the efficacy of recycling D1/D4 I can list the contents of a healthy diet and describe why each part is needed. D6 I can explain the consequences of imbalances in the diet (obesity, starvation and deficiency related diseases) D2/D3 I can name and describe the functions of some tissues and organs in the digestive system-3 (from year 7 hospitals) D11 I can make calculations of energy requirements in a healthy diet. D9 I can link adaptations of different parts of the digestive system to their functions. D5 I can outline the process of digesting food. D7 I can explain how digestion happens, with reference to enzymes. EC5/EC7 I can describe how power ratings relate to energy transfer and explain the effect of a higher power rating on the cost of running an appliance. EC14 I can calculate cost of electricity in domestic fuel bills when given energy transferred and cost per unit. EC11 I can compare and contrast energy resources. EC15/EC16 I can use scientific principles to suggest and justify which energy resources may be most suitable.
Skills	Extended Investigation: Boiling points – investigate how salts can affect the boiling point if water
Assessment	Knowledge assessed in formative tests and RAG rates against Doddle Steps. Assessment followed by ACTS lesson to secure knowledge Skills assessment marked against specified criteria for the investigation indicated on the front of the investigation log book
Living in the Arctic	
Knowledge	C11 I can describe the process of diffusion. C15 I can suggest how the rate of diffusion may be affected. PI7/PI13 I can describe what diffusion is and explain how diffusion happens in terms of the particle model. PI16 I can suggest how the rate of diffusion may be affected G8/G9 I can explain how structures in the human gas exchange system are adapted 0to their functions. EA19 I can suggest ways that the level of carbon dioxide in the atmosphere can be reduced. LW17 I can describe refraction using a ray model diagram. LW18 I can describe the formation of an image from specular reflection in a plane mirror using a ray model diagram. LW21 I can describe how light behaves in relation to different materials using the words transparent, translucent and opaque.
Skills	Extended Investigation: Diffusion – investigate the factors affecting the rate of diffusion
Assessment	Knowledge assessed in formative tests and RAG rates against Doddle Steps. Assessment followed by ACTS lesson to secure knowledge Skills assessment marked against specified criteria for the investigation indicated on the front of the investigation log book
The Zoo	
Knowledge	I9 I can explain that variation can be continuous or discontinuous, including the use of data. CR6 I can summarise the reactants and products of aerobic and anaerobic respiration using word equations CR7 I can compare and contrast aerobic and anaerobic respiration. CR8 I can evaluate the implications of aerobic and anaerobic respiration for organisms based on the reactants and products.

	E5 I can explain changes of state with reference to the energy levels of particles and whether a chemical reaction is exothermic or endothermic. E6 I can explain that during chemical reactions, energy may be absorbed or released during the making and breaking of bonds. M4 I C can describe simple displacement reactions when given the order of metals and carbon in the reactivity series. SW15/SW16 I can describe how sound requires matter to travel, and I can explain which material sound will travel fastest through with reference to particle arrangement. SW18 I can explain what it means to describe sound as a longitudinal wave, with reference to the direction of vibrations and energy. MG16/MG17 I can describe how to make an electromagnet and increase the strength of an electromagnet.
Skills	Extended Investigation: The Reactivity Series – investigate the relative reactivity of metals
Assessment	Knowledge assessed in formative tests and RAG rates against Doddle Steps. Assessment followed by ACTS lesson to secure knowledge Skills assessment marked against specified criteria for the investigation indicated on the front of the investigation log book
Going on Holiday	
Knowledge	H3 I can explain some effects of recreational drugs and substance misuse on behaviour, health and life processes. H4 I can evaluate some effects of recreational drugs on behaviour, health and life processes. RE8 I can discuss the importance of insect pollination and plant reproduction, with reference to human food security. R9 I can investigate methods of dispersal mechanisms quantitatively. CH14 I can explain the conditions and uses of neutralisation, combustion, thermal decomposition, oxidation, displacement and the reactions of metals and acids. PF7 I can describe how floating or sinking is dependent on density. SP19 I can describe how the seasons are due to the orbit of the Earth around the Sun and the fact the Earth is tilted on its axis. SP27 I can explain how the different seasons occur in the northern hemisphere, with reference to the tilt of the Earth and proximity to the Sun. SP29 I can apply knowledge of the seasons in the northern hemisphere to explain why the southern hemisphere experiences seasons differently.
Skills	Extended Investigation: Seed dispersal – investigate the factors affecting seed dispersal
Assessment	Knowledge assessed in formative tests and RAG rates against Doddle Steps. Assessment followed by ACTS lesson to secure knowledge Skills assessment marked against specified criteria for the investigation indicated on the front of the investigation log book
The Alchemist	
Knowledge	CH11 I can represent chemical reactions using word equations. CE23 I can describe how electrical current splits up at a branch in a parallel circuit and adds together when the branches join. CE25 I can describe how in a parallel circuit the potential difference is the same for each branch as the battery or cell. SE7 I can discuss some examples and applications of static electricity. SE8 I can explain how electrostatic force may attract a non-charged object through the induction of charge. SE2/ SE3/ SE4 I can describe the force between two charged objects as electrostatic force, and that this is either repulsion or attraction. I can describe electrostatic force as a non-contact force where objects are affected if they are inside the electric

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	SE6 I can describe how the movement of electrons can result in objects becoming charged with static electricity.
Skills	Extended Investigation: Rates of Reaction – investigate the effect of concentration on metal acid reactions
Assessment	Knowledge assessed in formative tests and RAG rates against Doddle Steps. Assessment followed by ACTS lesson to secure knowledge Skills assessment marked against specified criteria for the investigation indicated on the front of the investigation log book
Year 9	Y9 is a transition year between KS3 and KS4. GCSE content is introduced through GCSE topics with the remaining KS3 content mapped over the top to ensure compete coverage. The topics covered are: Physics – Energy; Electricity; Particles Biology – Cell Biology; Organisation and Systems Chemistry – The Periodic Table; Atomic Structure; Bonding; Properties of Matter Skills are further developed by introducing the required practicals for each topic which are integrated into the SoW and delivered at the appropriate point when the relevant knowledge has been covered. This is supported by a range of other practical activities as content allows
Assessment	Each topic is punctuated by a series of short low tariff tests based on past paper questions. This assesses knowledge but also allows students to practice the skills required in answering exam questions. Each Assessment is followed by an ACTS lesson where students complete a self-assessment and then complete a series of bespoke tasks in order to fill gaps in learning and secure knowledge. At the end of each topic a final assessment assesses all the work covered in the topic. The assessments used are those produced by AQA on the Exampro platform. The assessments are marked using the mark schemes provided by AQA in order to ensure standardisation of marking and to give as accurate a picture as possible of student progress. Additionally, “Going Green” weeks are interleaved into the program of study. These weeks reflect back on topics previously covered in order to ensure better knowledge retention across the course.