Wightwick Hall High School Maths Long Term Plan

2025-2026

Discoverers/Navigators/Pathfinders/Pioneers

Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Inheritance and evolution (Biology)	Reproduction Inc. Plants (Biology)	Solar System (Physics) and seasonal changes	Sound (Physics) Waves (Physics)	Chemical Changes (Chemistry)	Nutrition, digestion and excretion (Biology)
Pre-Teaching Assessment Suggestions	Multiple choice quiz. Ascertain what misconceptions students may have from the media.	Multiple choice quiz. Ascertain what misconceptions students may have from the media.	Multiple choice quiz. Ascertain what misconceptions students may have from the media.	Multiple choice quiz. Ascertain what misconceptions students may have from the media.	Multiple choice quiz. Ascertain what misconceptions students may have from the media.	Multiple choice quiz. Ascertain what misconceptions students may have from the media.
'Step On' Knowledge-Embedded literacy work and weekly class reading sessions.	Inheritance: Children learn that living things pass on traits to their offspring. For example, eye colour or fur patterns can be inherited from parents. Variation: Even though offspring resemble their parents, they are not identical. Differences (or variations) occur naturally within a species. Adaptation: Animals and plants have features that help them survive in their environments. For instance, polar bears have thick fur to stay warm. Natural Selection: Over time, helpful traits become more common	Life Cycles: Pupils learn how living things grow and change, including the stages of life for mammals, birds, insects, and amphibians. Reproduction in Animals: Animals reproduce to create offspring, which grow into adults. This includes learning about eggs, live births, and parental care. Reproduction in Plants: Children study how plants reproduce using seeds, pollen, and flowers. They learn about pollination, fertilisation, and seed dispersal. Growth and Development: The focus is on how living	The Sun: A star at the centre of our solar system that provides light and heat to Earth. Planets: There are eight planets orbiting the Sun — Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune. Each has unique features. Moons: Many planets have moons. Earth has one moon that orbits it and affects tides. Day and Night: Caused by Earth spinning (rotating) on its axis every 24 hours. Seasons: Created by Earth's tilt and its orbit around the Sun over a year.	Sound Waves Vibrations: Sound is made when objects vibrate. These vibrations travel through air, water, or solids as sound waves. Hearing: Our ears detect sound waves and send signals to the brain. Pitch and Volume: Pitch is how high or low a sound is. Volume is how loud or quiet it is. Materials and Sound: Sounds can be absorbed or reflected depending on the material (e.g., soft materials absorb sound).	Chemical changes happen when substances react and form new materials. These changes are usually irreversible, meaning you can't easily change them back. Some key points include: Burning: When things burn (like wood or paper), they react with oxygen and create new substances like ash, smoke, and gases. Rusting: Iron reacts with water and oxygen to form rust, a new substance. Cooking: Heating food causes chemical changes (e.g. baking a cake), creating new textures and flavors. Fizzing and Bubbling: Mixing substances like vinegar and baking soda creates a gas,	Nutrition is about the food we eat and how it helps our bodies grow, stay healthy, and have energy. A balanced diet includes: Carbohydrates (for energy) Proteins (for growth and repair) Fats (for energy and warmth) Vitamins and minerals (for health) Water (to stay hydrated) Digestion is the process where food is broken down so the body can absorb nutrients. It starts in the mouth and continues through the stomach and intestines. Key organs involved: Mouth – chewing and saliva start digestion Stomach – breaks food down with acids

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	because they help organisms survive and reproduce. This idea was famously explained by Charles Darwin. Fossils: Fossils provide evidence of how living things have changed over millions of years, helping scientists understand evolution.	things change over time, from birth to adulthood.	The Moon's Phases: Pupils learn how the Moon appears to change shape over time due to its position relative to Earth and the Sun.	Light Waves Light Sources: The Sun, lamps, and candles are sources of light. We see things when light reflects off them into our eyes. Reflection: Light bounces off surfaces like mirrors. Shadows: Formed when an object blocks light. Transparency: Transparent materials let light through (e.g., glass). Opaque materials block light (e.g., wood)	showing a chemical reaction. Signs of chemical changes: A new substance is made. Change in color or smell. Heat or light is given off. Bubbles or fizzing	Small intestine – absorbs nutrients Large intestine – absorbs water and forms waste Excretion is how the body gets rid of waste. This includes: Urine (from the kidneys) Faeces (from the digestive system) Sweat (from the skin)
'Extending up' Knowledge	DNA and Genes: Students learn that DNA carries genetic information in units called genes, which determine traits like eye colour or blood type. Chromosomes and Inheritance: Humans have 23 pairs of chromosomes. Offspring inherit half from each parent, which explains family	Human Reproductive System: Pupils learn the structure and function of male and female reproductive organs, including how they work together during reproduction. Fertilisation: They study how sperm and egg cells meet and combine genetic material to form a zygote, which develops into a baby.	Students deepen their understanding of the solar system with more scientific detail and exploration: Structure of the Solar System: Pupils study the Sun, eight planets, dwarf planets (like Pluto), moons, asteroids, and comets. Planetary Motion: They learn how planets orbit the Sun due to	Students explore sound and light as types of waves, diving deeper into their properties and behaviour: Sound Waves Type of Wave: Sound is a longitudinal wave, where particles vibrate parallel to the direction of travel. Medium Required: Sound needs a medium (solid, liquid, or gas) to	Chemical changes involve reactions where new substances are formed and the process is usually irreversible. These changes are different from physical changes, which do not create new materials. Key concepts include: Reactions of acids: Acids react with metals, bases, and carbonates to form	Nutrition focuses on the importance of a balanced diet and how different nutrients support the body: Carbohydrates – provide energy Proteins – help with growth and repair Fats – store energy and insulate the body

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	resemblances and genetic variation. Variation: Differences between individuals can be genetic (inherited) or environmental (caused by surroundings). This variation is key to evolution. Natural Selection: Traits that help organisms survive and reproduce become more common over generations. This is the driving force behind evolution. Evolution and Fossils: Fossils show how species have changed over time. Students explore how evidence supports the theory of evolution. Selective Breeding and Genetic Engineering: Humans can influence genetics through breeding and technology, raising ethical questions and scientific possibilities. This stage encourages critical thinking about how life changes and adapts, and how	Menstrual Cycle: Students understand the stages of the menstrual cycle and its role in preparing the body for pregnancy. Pregnancy and Birth: The development of the embryo and foetus is explored, along with how the baby is nourished and protected in the womb. Reproduction in Plants: They revisit plant reproduction, including pollination, fertilisation, seed formation, and dispersal. Puberty: Physical and emotional changes during adolescence are discussed, helping students understand their own development. This topic blends biology with personal development, encouraging curiosity and respect for how life begins and grows.	gravity, and how moons orbit planets. Gravity: A key force that keeps planets in orbit and influences tides, weight, and motion in space. Day, Night, and Seasons: Caused by Earth's rotation and its tilted orbit around the Sun. Phases of the Moon: Students explore how the Moon's appearance changes due to its position relative to Earth and the Sun.	travel — it cannot move through a vacuum. Speed of Sound: Travels fastest in solids, slower in liquids, and slowest in gases. Frequency and Amplitude: Frequency affects pitch (high or low). Amplitude affects volume (loud or quiet). Light Waves Type of Wave: Light is a transverse wave and part of the electromagnetic spectrum. Speed of Light: Extremely fast — about 300,000 km/s in a vacuum. Does Not Need a Medium: Light can travel through space (a vacuum). Reflection and Refraction: Reflection: Light bounces off surfaces (e.g., mirrors).	salts, water, and sometimes carbon dioxide. Combustion: Burning fuels in oxygen produces heat, light, and new substances like carbon dioxide and water. Oxidation and reduction: These are reactions where substances gain or lose oxygen. Thermal decomposition: Heating a compound causes it to break down into simpler substances. Displacement reactions: A more reactive element replaces a less reactive one in a compound. Signs of chemical changes: Color change Gas production (bubbles) Temperature change Formation of a precipitate (solid from liquids)	Vitamins and minerals – support various body functions Fibre – aids digestion Water – essential for hydration and chemical reactions Digestion is the process of breaking down food into smaller molecules that the body can absorb. It involves: Mechanical digestion (e.g. chewing) Chemical digestion (e.g. enzymes breaking down food) Key organs: Mouth – starts digestion Stomach – uses acid and enzymes Small intestine – absorbs nutrients Large intestine – absorbs water and forms waste Excretion is the removal of waste products from the body:

	genetics influences everything from health to biodiversity.			Refraction: Light bends when it passes through different materials (e.g., water or glass). Dispersion: White light splits into colours (spectrum) when passing through a prism. This topic helps students understand how waves carry energy and information, and how they interact with the world around us.	Students also learn to write word equations and symbol equations to represent these reactions.	Lungs – remove carbon dioxide. Kidneys – filter blood and produce urine. Skin – removes waste through sweat.
Cross Curricular Links	History, geography	Horticulture	Maths	Maths, music	Cooking, art, maths	Cooking
Careers in the Curriculum Opportunities	Animal care, farming, horticulture	Nursing, midwifery	Arts, museums	Music, sound engineering.	Culinary arts	Culinary arts
LOtC Opportunities	Festivals, Science week	Festivals, Science week	Festivals, Science week	Festivals, Science week	Festivals, Science week	Festivals, Science week