Year 8 Science

Year 8 Science builds upon the foundations established in Year 7, developing students' understanding of the biological, chemical and physical processes that shape the world around them. Through practical investigations, problem-solving and scientific enquiry, students deepen their knowledge while developing the skills needed to think and work like scientists.

Advent 1: Particles and Acids & Alkalis

Students develop their understanding of the particle model by exploring how particles behave in solids, liquids and gases. They investigate how thermal energy is transferred and learn how scientists measure physical properties accurately. Students also study acids and alkalis, learning how these substances are identified, how they react, and how neutralisation is used in everyday life and industry.

Key areas of study:

- Particle model of solids, liquids and gases
- Density, mass and volume
- Changes of state
- Thermal energy
- Conduction, convection and radiation
- Accuracy, resolution and measurement errors
- Acids, alkalis and bases
- pH scale and indicators
- Corrosive and irritant substances
- Neutralisation reactions
- Common acids and alkalis
- Formation of salts
- Everyday applications of neutralisation
- Environmental impacts of acid rain

Advent 2: Respiration, Electricity and Space

Students explore how living organisms release energy through respiration and how organ systems work together to supply cells with the materials they need. They investigate electricity and magnetism, learning how charged particles, circuits and magnetic fields explain many everyday technologies. Students also begin studying space, exploring gravity, the Solar System and the wider universe.

Key areas of study:

- Levels of organisation in living organisms
- Respiration and energy release in cells
- Aerobic and anaerobic respiration
- Gas exchange in the lungs
- Breathing and ventilation

- Exercise and the respiratory system
- Electric charge and static electricity
- Conductors and insulators
- Current and simple circuits
- Circuit symbols and electrical measurements
- Magnetic fields and electromagnets
- Earth's place in the Solar System
- Mass, weight and gravity
- Planets and their characteristics
- Day and night
- Seasons
- Galaxies, stars and the universe
- The Big Bang Theory

Lent: Healthy Lifestyle and Waves

Students explore how lifestyle choices can affect health and wellbeing, developing an understanding of nutrition, digestion and the role of different nutrients in the body. They also investigate waves, learning how light and sound travel, how we see and hear, and how wave behaviour is used in a range of technologies.

Key areas of study:

- Nutrients and balanced diets
- The causes and effects of malnutrition
- Food tests for biological molecules
- The digestive system and its organs
- Digestion and absorption
- Enzymes and their role in digestion
- Waves and wave properties
- Transverse and longitudinal waves
- Amplitude, wavelength and frequency
- Reflection and refraction
- Light and colour
- The structure and function of the eye
- Sound waves and hearing
- Volume and pitch
- Ultrasound and echoes

Trinity: Ecology and Chemical Reactions

Students investigate how living organisms are classified and how plants are adapted to survive and reproduce in different environments. They explore photosynthesis, food production and ecological relationships, while also developing their

understanding of chemical reactions involving metals and the patterns of reactivity found within the periodic table.

Key areas of study:

- Classification of living organisms
- Vertebrate groups and their characteristics
- Plant cell structures and functions
- Root hair cells and absorption
- Photosynthesis
- Factors affecting the rate of photosynthesis
- Leaf structure and adaptation
- Adaptations for survival
- Predator-prey relationships
- Surface area to volume ratio
- Plant reproduction and pollination
- Seed dispersal
- Metals and non-metals
- Physical properties of metals
- Chemical reactions and evidence for chemical change
- Reactions between metals and acids
- Formation of salts
- The reactivity series
- Displacement reactions
- Extraction of metals from ores

Year 8 continues to build students' scientific knowledge across Biology, Chemistry and Physics while developing the practical, analytical and mathematical skills needed for future success in Science.