Year 5 Science Knowledge Progression

Term / unit	Builds on	Knowledge progression	Working scientifically	Key vocabulary	Where this leads next
Advent 1 **Materials: Mixtures and separation**	• Builds on Y4 states of matter and earlier material properties. • Recalls solids, liquids, gases and reversible changes.	• Recognise mixtures and identify components. • Use sieving for differently sized solids and filtering for insoluble solids in liquids. • Understand that dissolving forms a solution and is different from melting. • Know that some substances dissolve more readily than others and temperature can affect dissolving rate. • Recover a dissolved solid by evaporation and select suitable separation methods for mixtures.	• Choose an appropriate enquiry type. • Identify changed, measured and control variables. • Measure time and temperature appropriately. • Record results systematically and use evidence to justify a separation method.	mixture; separate; sieve; filter; insoluble; soluble; solution; dissolve; evaporation; residue; filtrate	• Leads directly into Properties and changes. • Supports later understanding of reversible/irreversible change and KS3 particle models.
Advent 2 **Materials: Properties and changes**	• Builds on mixtures/separation and Y4 states of matter. • Recalls conductivity and material properties from earlier years.	• Compare materials by hardness, transparency, thermal and electrical conductivity and other properties. • Relate material properties to appropriate uses. • Distinguish reversible physical changes from irreversible changes that create new materials. • Recognise signs of chemical change such as gas production, colour change or temperature change. • Explain why particular materials are chosen for everyday applications.	• Plan comparative tests of material properties. • Select suitable measuring equipment and repeat measurements. • Use results to rank or classify materials and evaluate whether evidence supports a conclusion.	property; hardness; transparency; conductor; insulator; thermal; electrical; reversible; irreversible; chemical change	• Supports KS3 properties of matter, particles and chemical reactions. • Provides evidence-handling skills for later Year 5 enquiries.
Lent 1 **Forces and space: Earth and space**	• Builds on seasonal change, light and shadow and earlier work on forces. • Uses understanding that scientific models represent things that may be difficult to observe directly.	• Know that the Sun is a star at the centre of the Solar System and planets orbit it. • Describe the movement of Earth and other planets relative to the Sun. • Describe the Moon's orbit around Earth. • Use Earth's rotation to explain day and night and the apparent movement of the Sun. • Understand that the Sun, Earth and Moon are approximately spherical and that scientific ideas about the Solar System have changed with evidence.	• Use and evaluate models of the Solar System. • Research using reliable secondary sources. • Compare scientific explanations and use evidence to support conclusions. • Represent relative movements with diagrams/models.	Solar System; Sun; star; planet; orbit; rotate; axis; Moon; satellite; spherical; geocentric; heliocentric	• Applied in the asteroid Making connections enquiry. • Supports KS3 space physics and gravity.
Lent 2 **Living things: Life**	• Builds on Y3 plant reproduction and Y4 classification/habitats.	• Compare life cycles of mammals, birds, amphibians and insects. • Describe sexual reproduction in animals and	• Observe and compare life-cycle patterns. • Research the work of	life cycle; reproduction; sexual; asexual;	• Supports Y6 evolution/inheritance and circulation/health.

Term / unit	Builds on	Knowledge progression	Working scientifically	Key vocabulary	Where this leads next
cycles and reproduction + Animals: Human timeline	• Recalls that living things reproduce and change as they grow.	plants and recognise asexual reproduction in some plants. • Explain key stages in flowering-plant reproduction, including pollination, fertilisation, seed formation and dispersal. • Recognise patterns of growth and development across the human life cycle. • Describe major stages from infancy to old age and recognise that development varies between individuals.	scientists/naturalists using secondary sources. • Record changes over time and present life-cycle information clearly. • Use graphs/tables to identify patterns in growth data.	pollination; fertilisation; seed dispersal; metamorphosis; gestation; infancy; adolescence; adulthood	• Prepares for KS3 reproduction and human development.
Pentecost 1 Forces and space: Unbalanced forces	• Builds on Y3 forces/magnets and Earth and space. • Recalls contact and non-contact forces and effects of friction.	• Identify gravity as a force pulling objects towards Earth. • Understand that forces can be balanced or unbalanced and that unbalanced forces change motion. • Explain effects of air resistance and water resistance. • Recognise friction as a force between surfaces and understand how mechanisms such as levers, pulleys and gears can affect force/movement. • Relate force size and direction to changes in movement.	• Use force meters and take repeated measurements. • Plan fair/comparative tests involving resistance. • Represent force direction and relative size clearly. • Identify patterns and explain results using force concepts.	force; gravity; weight; mass; friction; air resistance; water resistance; balanced; unbalanced; lever; pulley; gear	• Applied in the asteroid-impact enquiry. • Supports KS3 forces, motion and pressure.
Pentecost 2 Making connections: Asteroid impact craters	• Revisits Earth and space and unbalanced forces. • Draws together Year 5 planning, measuring and data-analysis skills.	• Apply knowledge of forces and space to model asteroid impacts. • Understand that changing impact conditions can alter crater dimensions. • Recognise that a model can provide useful evidence while having limitations compared with real events. • Use evidence to explain relationships between variables.	• Form a testable question and identify variables. • Carry out repeated comparative tests safely. • Measure crater diameter consistently and record quantitative data. • Graph/compare results, draw an evidence-based conclusion and evaluate limitations.	asteroid; impact; crater; diameter; variable; repeat; mean; pattern; evidence; model; conclusion; evaluate	• Consolidates Year 5 independent enquiry. • Prepares for increasingly formal Year 6 and KS3 investigations.