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| **Science****Year 5****2024 – 2025** |
| **Autumn 1****Materials: Mixtures and Separation** |
| Vocabulary | Knowledge | Objectives |
| * Dissolve
* Evaporation
* Insoluble
* Mixture
* Solution
* Filtering
 | * Define the term mixture and name some common examples.
* Define the term sieving and explain how sieving separates mixtures.
* Define the term filtering and explain how filtering separates mixtures.
* Define the terms solution and dissolve and name some common examples of solutions.
* Recall some factors that affect the time taken to dissolve.
* Describe the effect of temperature on the time taken to dissolve.
* Define the term evaporating and explain how evaporating separates solutions.
* Identify when sieving, filtering and evaporating should be used.
 | 1. To describe mixtures. Working scientifically to research using a range of secondary resources.
2. To explain the process of sieving. Working scientifically to draw and annotate a diagram to explain a concept.
3. To explain the process of filtering. Working scientifically to identify testable questions and how to answer them.
4. To describe solutions and how they can be identified. Working scientifically to make observations about solutions.
5. To identify which factors, affect the time taken to dissolve. Working scientifically to plan a fair test with consideration of variables and measurements.
6. To describe the process of evaporation.
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| **Autumn 2****Materials: Properties and Changes** |
| Vocabulary | Knowledge | Objectives |
| * Transparent
* Conductivity
* Circumference
* Insulator
* Dissolve
* Reversible
 | * Determine the hardness of different materials and link this to their uses.
* Determine the transparency of different materials and link this to their uses.
* Determine the thermal and electrical conductivity of different materials and link this to their uses.
* Demonstrate, identify and describe reversible and irreversible changes.
* Evaluate the hardness test to determine the degree of trust in the results.
* Plan and draw a table of results.
* Write a detailed, organised and easy to follow method.
* Write a prediction using prior knowledge of the states of matter.
* Analyse observations about rusting and use them to support a conclusion.
* Measure accurately in centimetres.
 | 1. To determine the hardness of materials and link this to their uses. Working scientifically to evaluate the hardness test to determine the degree of trust in the results.
2. To determine the transparency of different materials and link this to their uses. Working scientifically to plan and draw a table of results.
3. To determine the conductivity of different materials and link this to their uses. Working scientifically to write a detailed, organised method that is easy to follow.
4. To demonstrate reversible changes. Working scientifically to write a prediction using prior knowledge of the states of matter.
5. To demonstrate irreversible changes. Working scientifically to analyse observations about rusting and use them to support a conclusion.
6. To demonstrate irreversible changes. Working scientifically to measure the circumference of a balloon accurately.
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| **Spring 1****Forces and Space: Earth and Space** |
| Vocabulary | Knowledge  | Objectives |
| * Solar System
* Spherical
* Celestial
* Orbit
* Planet
* Seasons
 | * Describe the geocentric and heliocentric models.
* Name and describe the shape of celestial bodies.
* Describe the orbits of celestial bodies in the Solar System and name the force that keeps them in their orbits.
* Describe the orbit of the Moon around the Earth and its phases.
* Explain how day and night occur.
* Explain how the seasons occur.
* Explain how a sundial works.
* List some of the uses of satellites and explain why space junk poses a problem to them.
* Pose and identify testable questions about the movement of the celestial bodies in our Solar System.
* Use a model to represent the Solar System.
* Design and draw a table to record data on moons.
* Accurately draw day and night and seasons diagrams.
* Calibrate a sundial using a compass and torch and use it to measure time.
* Analyse patterns in temperature data for the Earth and use them to predict temperature values for the Earth in the future.
 | 1. To compare the contributions of Ptolemy, Alhazen and Copernicus to models of the Solar system. Working scientifically to pose testable questions about the solar system.
2. To describe the movement and shapes of the celestial bodies in our Solar System. Working scientifically to develop a model to represent the Solar System.
3. To describe the movement of the Moon relative to the Earth. Working scientifically to design and draw a table.
4. To explain the causes of day and night and the seasons. Working scientifically to draw a diagram to explain day and night.
5. To devise a sundial to tell the time. Working scientifically to calibrate and use a sundial to measure time.
6. Science in action to describe some uses of satellites and the problems posed by space junk. Working scientifically to use temperature data to make predictions about climate change.
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| **Spring 2****Living Things: Life Cycles and Reproduction** |
| **Vocabulary** | **Knowledge**  | **Objectives** |
| * Asexual reproduction
* Metamorphosis
* Fertilisation
* Amphibian
* Characteristic
* Germination
 | * Describe the life cycle of a plant, including the reproductive stage.
* ​​Describe the life cycle of a mammal.
* Describe the life cycle of a bird and compare it with that of a mammal.
* Describe the life cycle of an amphibian.
* Describe the life cycle of an insect and compare it with that of an amphibian.
* Describe asexual reproduction in plants.
* Observe and compare equivalent parts in different flowers.
* Research the life cycles of different mammals.
* Pose questions to compare the life cycles of different birds.
* Suggest how one temperature may affect egg hatching.
* Use data to describe a relationship and make predictions.
* Represent root growth over time on a line graph.
 | 1. To describe the life cycle of a plant, including the reproductive stage. Working scientifically: To observe and compare equivalent parts in different flowers.
2. To describe the life cycle of a mammal. Working scientifically: To research the life cycles of different mammals.
3. To describe the life cycle of a bird and compare it with that of a mammal. Working scientifically: To pose questions to compare the life cycles of different birds.
4. To describe the life cycle of an amphibian. Working scientifically: To suggest how temperature may affect egg hatching.
5. To describe the life cycle of an insect and compare it with that of an amphibian. Working scientifically: To use data to describe a relationship and make predictions.
6. To describe asexual reproduction in plants. Working scientifically: To represent root growth over time on a line graph.
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| **Summer 1****Forces and Space: Unbalanced Forces** |
| Vocabulary | Knowledge | Objectives |
| * unbalanced
* air resistance
* water resistance
* gear
* lever
* pulley
 | * Describe gravity and its effects.
* Describe the relationship between mass and gravity.
* Describe air resistance and its effects.
* Describe friction and its effects.
* Describe water resistance and its effects.
* Describe the relationship between surface area and air and water resistance.
* Explain how to make an object aerodynamic or streamlined.
* Describe the effects of levers, pulleys and simple machines on movement.
* Describe gravity and its effects.
* Describe the relationship between mass and gravity.
* Describe air resistance and its effects.
* Describe friction and its effects.
* Describe water resistance and its effects.
* Describe the relationship between surface area and air and water resistance.
* Explain how to make an object aerodynamic or streamlined.
* Describe the effects of levers, pulleys and simple machines on movement.
 | 1. To describe gravity and its effects. Working scientifically to analyse data to write a conclusion.
2. To describe air resistance and its effects. Working scientifically to plan a fair test to investigate air resistance.
3. To describe water resistance and its effects. Working scientifically to design a results table.
4. To describe friction and its effects. Working scientifically to evaluate a method.
5. To describe the effects of levers, pulleys and simple machines on movement. Working scientifically to draw and label a diagram.
6. To describe the relationship between lever length and effort. Working scientifically to draw an accurate line graph.
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| **Summer 2****Animals: Human Timeline** |
| Vocabulary | Knowledge | Objectives |
| * reproduction
* foetus
* gestation period
* hormones
* period (menstruation)
* puberty
 | * Order the stages in growth and development from birth to old age.
* Describe physical and developmental changes from a baby through to old age.
* Describe changes that occur in males and females during puberty.
* Suggest ways to manage the changes that occur during puberty.
* Recall what is meant by a gestation period.
* Describe how gestation varies across animals and compare this to humans.
* Use data to describe growth from baby to adult.
* Identify where on the graph the rate of growth changes.
* Use a line graph to make predictions about height.
* Choose a suitable title and axes labels for the scatter graph and plot data on the scatter graph.
 | 1. To describe how humans change from babies through to old age.
2. To use a line graph to identify patterns in height and predict values.
3. To identify changes in males and females as a result of puberty.
4. To explore the gestation periods of humans and other animals.
5. To plot data on a scatter graph.
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