Ingoldmells Academy Long-Term Map: Science

Nursery						
EYFS	Animal adventures Seasons	Seasons	I am a scientist Seasons	Seasons	Our beautiful planet Seasons	Seasons
Vocabulary						
Year 1/2 Knowledge	**Cycle A** **Plants: introduction to plants** **Knowledge** To identify plants in the school grounds. **Working scientifically** To plan an investigation. **Knowledge** To identify parts of a flowering plant. **Working scientifically** To draw and label a diagram. **Knowledge** To identify and name wild and garden plants. **Working scientifically** To sort flowers into groups. **Knowledge**	**Cycle A** **Force, Earth and space: seasonal changes** **Knowledge** To identify how the weather changes across the four seasons. **Knowledge** To identify events and activities that take place in different seasons. **Knowledge** To recognise how trees change across the four seasons. **Knowledge**: To recognise that daylight hours change across the four seasons. **Working scientifically:**	**Cycle A** **Living things and their habitats: Habitats** To identify some of the characteristics of living things. **Knowledge** To recognise the difference between things that are alive, were once alive or have never been alive. **Working scientifically** To classify objects into groups. To identify plants and animals in different habitats. **Knowledge** To identify how a habitat provides animals and plants with what they need to survive. **Working scientifically**	**Cycle A** **Animals including humans: Life cycles and health** To identify different stages of the human life cycle. To know which offspring come from which parent animal. **Knowledge** To observe and measure growth in humans. **Working scientifically** To use simple measuring equipment. **Knowledge** To identify and list the basic needs for survival for humans and animals. **Working scientifically** To use secondary sources to research. **Knowledge**	**Cycle A** **Plants: plants growth** **Knowledge** To recognise that seeds need certain conditions for growth. **Working scientifically** To plan comparative tests. **Knowledge** To recognise that seeds and bulbs contain what they need to grow into a plant. **Working scientifically** To measure with a ruler. **Knowledge** To describe what seeds need to germinate.	**Cycle A** **Making connections: ocean protectors** **Knowledge** To describe a rock pool as an example of a habitat. **Working scientifically** To record information about model rock pools. **Knowledge** To compare animal life cycles. **Working scientifically** To pose questions about life cycles. **Knowledge** To describe some ways humans affect the ocean. **Working scientifically** To investigate what happens to different materials in the ocean. **Knowledge** To describe how litter affects food chains. **Working scientifically**

	To identify and name deciduous and evergreen trees. **Working scientifically** To measure and compare leaves. **Knowledge** To recognise that new plants come from seeds and bulbs. **Working scientifically** To recognise that observations do not always match predictions. **Science in action** To recognise the importance of a scientist's role. **Working scientifically** To use observations to find answers to questions.	To record data in a pictogram. **Knowledge** To observe changes across the four seasons. **Working scientifically** To gather and record data about how seasons change over time. **Knowledge** To plan and carry out a weather report.	To carry out research to find answers to questions. To recognise how animals and plants depend on each other. To recall how animals get their food from plants and other animals.	To recognise the importance of exercise and personal hygiene. **Working scientifically** To make observations over time. **Knowledge** To identify how to have a balanced diet. **Working scientifically** To interpret collected results.	**Working scientifically** To record data in a table. **Knowledge** To describe the effect of light on plant growth. **Working scientifically** To observe using a magnifying glass. **Knowledge** To identify stages of a plant's life cycle. **Working scientifically** To draw and label diagrams. **Knowledge** To recognise what plants need for healthy growth. **Science in action** To recognise that humans have a responsibility to care for plants.	To use results to advise about litter. **Working scientifically** To report on changes to ocean numbers.

Ingoldmells Academy Long-Term Map: Science

Vocabulary	• Bulb • deciduous • evergreen • flower • fruit • garden plants • growth • leaf • roots • seed • stem • trunk • wild plants	• deciduous tree • evergreen tree • season • weather	• alive • carnivore (Y1) • dead • depend • diet (Y1) • energy • food chain • growth (Y1) • habitat • herbivore (Y1) • life processes • mammal (Y1) • omnivore (Y1) • predator • prey • shelter	• basic needs • egg • health • hygiene • life cycle • live young • pupa • spawn • survive • teenager • toddler • tadpole	bulb (Y1) energy flower (Y1) germinate growth (Y1) leaf (Y1) life cycle nutrient seed (Y1) shoot stem (Y1)	• depend • difference • egg • food chain • habitat • invention • life cycle • live young • season
Year 3/4 Knowledge	**Cycle A** **Energy: Light and shadows** **Knowledge** To explain the role of light sources. **Working scientifically** To plan and draw a results table. **Knowledge** To compare light reflecting on different surfaces. **Knowledge**	**Cycle A** **Animals, including humans: Movement and nutrition** **Knowledge** To explain the role of a skeleton. **Working scientifically** To group animals based on their physical properties. **Knowledge** To recognise the main bones in the body. **Working scientifically** To measure and sort data.	**Cycle A** **Materials: Rocks and soil** **Knowledge** To group rocks using their appearance. **Working scientifically** To observe the appearance of rocks closely, using a magnifying glass. **Knowledge** To group rocks using their physical properties. **Working scientifically**	**Cycle A** **Animals including humans: digestion and food** **Knowledge** To describe the function of the human digestive system. **Working scientifically** To evaluate a model. **Knowledge** To recognise the different types of human teeth and their roles in eating. **Science in action**	**Cycle A** **Energy: Electricity and circuits** **Knowledge** To recognise how electrical appliances are powered. **Working scientifically** To record and classify qualitative data. **Knowledge**	**Cycle A** **Making connections: How does food affect muscle fatigue?** **Knowledge** To revise the units Movement and nutrition, Digestion and food and Rocks and soil. **Working scientifically** To plan a comparative test. **Knowledge**

	To recognise which materials cast a shadow. **Working scientifically** To ask testable questions and plan how to answer them. **Knowledge** To summarise how shadows change throughout the day. **Working scientifically** To consider variables when planning an enquiry. **Knowledge** To investigate how the distance of the light source affects the size of its shadow. **Working scientifically** To find patterns in data and form conclusions. **Knowledge** To tell a story using shadow puppets. **Science in action**	**Knowledge** To explain how muscles are used for movement. **Science in action** To explore scientific advances. **Knowledge** To explain how food is an essential energy source for animals. **Working scientifically** To gather and compare data to answer questions. **Knowledge** To identify the main nutrient groups and their simple functions. **Working scientifically** To record information using secondary sources. **Knowledge** To explain what makes a balanced diet. **Science in action** To explore how knowledge has progressed over time and how different	To make predictions, suggest improvements and explain observations over time. **Knowledge** To describe the process of fossil formation. **Working scientifically** To present research on fossil formation. **Knowledge** To identify fossils and group rocks accordingly. **Working scientifically** To use the fossil record to answer questions about the past. **Knowledge** To compare soils and how they were formed. **#Working scientifically** To record the drainage rate for different soils in a bar chart. **Knowledge** To describe a soil sample using sedimentation. **Working scientifically** To draw and label a diagram.	To describe real observation methods and evidence collected. **Knowledge** To explain how to care for our teeth. **Working scientifically** To evaluate a method by considering its limitations. **Knowledge** To recognise that differences in teeth relate to an animal's diet. **Working scientifically** To group animals based on their diet. **Knowledge** To recognise producers, predators and prey in food chains. **Working scientifically** To analyse patterns and form conclusions using scientific knowledge.	To construct an electrical circuit. **Working scientifically** To draw a scientific diagram. **Knowledge** To explain the use of switches in a circuit. **Knowledge** To explain the use of materials as electrical conductors or insulators. **Working scientifically** To write a method. **Knowledge** To investigate what affects bulb brightness. **Working scientifically** To pose questions and plan ways to test them. **Knowledge**	To revise the units Movement and nutrition and Digestion and food. **Working scientifically** To gather and record data. **Knowledge** To revise the units Movement and nutrition and Digestion and food. **Working scientifically** To conclude and evaluate the investigation. **Knowledge** To revise the unit Electricity and circuits. **Working scientifically** To pose and investigate new questions. **Knowledge** To revise the unit Light and shadows and Movement and nutrition. **Working scientifically**

	To recall how different people work with light and shadows.	jobs use this information.		**Knowledge** To recognise that animal poo can give us clues about digestion, teeth and diet. **Working scientifically** To construct a results table for recording observations.	To explain how to be safe around electricity. **Science in action** To explore how scientific advances inform safety advice.	To report on my findings using a shadow puppet display.
Vocabulary	• cast a shadow • control variable • dangerous • light source • luminous • non-luminous • opaque • protect • prove • reflect • reflection • reflective (shiny) • relationship • shadow • shadow puppet • translucent • transparent	• balanced diet • bone • carbohydrate • diet • endoskeleton • energy • exoskeleton • fat • fibre • invertebrate • joint • movement • muscle • nutrient • pelvis • protection • protein	• crystal • fossil • grain • hard • hardness • rock • sediment sedimentary rock sedimentation soft • soil	• canine • carnivore (Y1) • digest • digestive system • ethics • faeces • food chain (Y2) • herbivore (Y1) • incisor • large intestine • molar • mouth • nutrient (Y3) • oesophagus • omnivore (Y1) • predator (Y2)	• appliance • battery/cell • bulb • buzzer • circuit • conclusion • electrical conductor • electrical insulator • electricity • mains • method • motor • power source • property • switch • wire	• battery • bulb • circuit • fair • joint • light source • opaque • shadow

		• ribs • skeleton • skull • spine • support • vertebrate • mineral • vitamin • water		• premolar • prey (Y2) • producer • saliva • small intestine • stomach		
Year 5 Knowledge	**Materials: Mixtures and separation** **Knowledge** To describe mixtures. **Working scientifically** To research using a range of secondary resources. **Knowledge** To explain the process of sieving. **Working scientifically** To draw and annotate a diagram to explain a concept. **Knowledge**	**Materials: Properties and changes** **Knowledge** 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. **Knowledge** To determine the transparency of different materials and link this to their uses.	**Forces, Earth and space: Earth and space** **Knowledge** 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. **Knowledge** To describe the movement and shapes of the celestial bodies in our Solar System. **Working scientifically** To develop a model to	**Living things and their Habitats: Life cycles and reproduction** **Knowledge** To describe the life cycle of a plant, including the reproductive stage. **Working scientifically** To observe and compare equivalent parts in different flowers. **Knowledge** To describe the life cycle of a mammal. **Working scientifically** To research the life cycles of different mammals.	**Forces, Earth and space: Unbalanced forces** **Knowledge** To describe gravity and its effects. **Working scientifically** To analyse data to write a conclusion. **Knowledge** To describe air resistance and its effects. **Working scientifically** To plan a fair test to investigate air resistance. **Knowledge**	**Animals Including Humans: Human timeline** **Knowledge** To describe how humans change from babies through to old age. **Working scientifically** To use a line graph to identify patterns in height and predict values. **Knowledge** To identify changes in males and females as a result of puberty. **Knowledge** To explore the gestation periods of

	To explain the process of filtering. **Working scientifically** To identify testable questions and how to answer them. **Knowledge** To describe solutions and how they can be identified. **Working scientifically** To make observations about solutions. **Knowledge** To identify which factors affect the time taken to dissolve. **Working scientifically** To plan a fair test with consideration of variables and measurements. **Knowledge**	**Working scientifically** To plan and draw a table of results. **Knowledge** 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. **Knowledge** To demonstrate reversible changes. **Working scientifically** To write a prediction using prior knowledge of the states of matter. **Knowledge** To demonstrate irreversible changes.	represent the Solar System. **Knowledge** To describe the movement of the Moon relative to the Earth. **Working scientifically** To design and draw a table. **Knowledge** To explain the causes of day and night and the seasons. **Working scientifically** To draw a diagram to explain day and night. **Knowledge** To devise a sundial to tell the time. **Working scientifically** To calibrate and use a sundial to measure time. **Science in action** To describe some uses of satellites and the problems posed by space junk.	**Knowledge** 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. **Knowledge** To describe the life cycle of an amphibian. **Working scientifically** To suggest how temperature may affect egg hatching. **Knowledge** 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. **Knowledge**	To describe water resistance and its effects. **Working scientifically** To design a results table. **Knowledge** To describe friction and its effects. **Working scientifically** To evaluate a method. **Knowledge** To describe the effects of levers, pulleys and simple machines on movement. **Working scientifically** To draw and label a diagram. **Knowledge** To describe the relationship between lever length and effort.	humans and other animals. **Working scientifically** To plot data on a scatter graph. **Making connections: Does the size of an asteroid affect the diameter of its impact crater?** **Knowledge** To revise the units *Earth and space* and *Life cycles and reproduction*. **Working scientifically** To plan a comparative test. **Knowledge** To revise the units *Unbalanced forces* and *Mixtures and separation*. **Working scientifically** To gather and record data. **Knowledge** To revise the units *Separating*

	To describe the process of evaporation.	**Working scientifically** To analyse observations about rusting and use them to support a conclusion. **Knowledge** To demonstrate irreversible changes. **Working scientifically** To measure the circumference of a balloon accurately.	**Working scientifically** To use temperature data to make predictions about climate change	To describe asexual reproduction in plants. **Working scientifically** To represent root growth over time on a line graph.	**Working scientifically** To draw an accurate	*mixtures* and *Unbalanced forces*. **Working scientifically** To conclude and evaluate the investigation.
Vocabulary	• dissolve • filtering • insoluble • mixture • sieving • soluble • solution	• burning • control • conductor • electrical conductivity • hazard • insulator • irreversible change • reversible change • rust • rusting • safety • thermal conductivity	• celestial bodies • day/daytime • degrees Celsius (LKS2) • discovery • Earth • gravity • line graph • line of best fit • Moon • night/nighttime • orbit • phase • Solar System	• adolescence • asexual reproduction • characteristic • fertilisation • germination • gestation • gills • incubation • lungs • mating • metamorphosis • offspring • ovule • pollen	• air resistance • gear • gravity • lever • pivot • pulley • surface area • unbalanced • water resistance	• foetus • gestation period • hormones • life cycle • period (menstruation) • puberty • relationship • air resistance • celestial bodies • gravity

		• transparency	• spherical • star • temperature (LKS2)	• pollination • reproduction • sexual reproduction		• spherical
Year 6 Knowledge	**Living things and their Habitats: Classifying big and small** **Knowledge** To explain how organisms are classified using the Linnaean system. **Knowledge** To classify the cold-blooded vertebrate groups using their common characteristics. **Working scientifically** To use a classification key to classify frog species. **Knowledge** To classify the warm-blooded vertebrate groups using their	**Energy: Light and reflection** **Knowledge** To describe the pathway of light. **Working scientifically** To use evidence to form conclusions. **Knowledge** To describe how we see. **Working scientifically** To draw scientific diagrams. **Knowledge** To explain how shadows change. **Working scientifically** To pose questions. **Knowledge** To investigate what affects the angle of	**Living things and their Habitats: Evolution and inheritance** **Knowledge** To explain why there are differences within a species. **Working scientifically** To group factors. **Knowledge** To recognise the inheritance of characteristics in plants and animals. **Knowledge** To explain why adaptation is necessary. **Knowledge** To model how natural selection affects population size. **Working scientifically** To evaluate the	**Energy: Circuits, batteries and switches** **Knowledge** To use recognised symbols for electrical components. **Knowledge** To predict and present results for electrical circuits. **Working scientifically** To use standardised symbols when drawing diagrams. **Knowledge** To recognise a link between the number of components and resistance. **Working scientifically** To explain results using scientific knowledge. **Knowledge**	**Animals, including humans: Circulation and health** **Knowledge** To identify factors that affect our health and how to reduce their negative impact. **Working scientifically** To evaluate sources of information. **Knowledge** To summarise the key structures and purpose of the circulatory system. **Knowledge** To identify the key roles of blood. **Working scientifically**	**Making connections: Are some sunglasses safer than others?** **Knowledge** To revise the units *Circulation and health* and *Light and reflection*. **Working scientifically** To plan a comparative test. **Knowledge** To revise the units *Light and reflectio*n and *Circuits, batteries and switches*. **Working scientifically** To gather and record data. **Knowledge** To revise the units *Light and reflection* and *Circulation and health*. **Working scientifically**

	common characteristics. **Working scientifically** To use a classification key to classify vertebrates. **Knowledge** To classify invertebrates using their characteristics. **Working scientifically** To use a classification key to classify invertebrates. **Knowledge** To describe how the plant kingdom is organised (based on shared characteristics). **Working scientifically** To produce a working classification key.	the reflected ray. **Working scientifically** To record results as a line graph. **Knowledge** To explain how a periscope works. **Knowledge** To explain how mirrors are helpful. Science in action To explore different jobs or inventions that depend on	degree of trust and pose new questions for further enquiry. **Knowledge** To describe the theory of evolution. **Working scientifically** To consider evidence used to inform theories. **Knowledge** To recognise evidence that can be used for evolution. **Working scientifically** To consider the degree of trust in the evidence used.	To identify ways to change voltage within an electrical circuit. **Working scientifically** To design a results table. **Knowledge** To investigate how voltage affects bulb brightness. **Working scientifically** To plan an enquiry. **Knowledge** To apply knowledge of circuits and components to a practical solution. **Science in action** To recognise that scientific knowledge can solve a problem.	To evaluate a model. **Knowledge** To explore the relationship between animal size and heart rate. **Working scientifically** To interpret patterns in data. **Knowledge** To investigate the relationship between exercise and heart rate. **Working scientifically** To write a method. **Knowledge** To describe the relationship between heart rate and fitness. **Working scientifically** To draw a line graph.	To conclude and evaluate the investigation. **Knowledge** To revise the units *Classifying big and small*, *Evolution and inheritance*, *Light and reflection* and *Circulation and health*. **Working scientifically** To use further data to inform a conclusion. **Knowledge** To revise the units *Light and reflection* and *Circulation and health*. **Working scientifically** To report on findings in the form of an advert.

Ingoldmells Academy Long-Term Map: Science

	Knowledge To describe and classify microorganisms. **Working scientifically** To use a classification key to classify bacteria.					
Vocabulary	• classification key (LKS2) • classify (LKS2) • cold-blooded • conifer • exoskeleton • fern • life-processes • micro-organism • moss • organism • warm-blooded	• anomaly • light ray • pupil • ray diagram • reflective	• adaptation • anomaly • competition • environment • environmental • evidence • evolution • extinct • fossil • gene • inherit • inheritance • natural selection • parent • population • selective breeding • survival of the fittest • theory	• cell • circuit diagram • current • hazard • resistance • voltage	• blood • bloodstream • blood vessels • carbon dioxide • circulatory system • drug • heart • heart rate • oxygen • pulse • rate (LKS2)	• adaptation • inherit