LKS2 SCIENCE

Scientific Enquiry Statements

1. Ask relevant questions and use different types of scientific enquiries to answer them.
2. Set up simple practical enquiries, comparative and fair tests.
3. Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.
4. Gather, record, classify and present data in a variety of ways to help in answering questions.
5. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.
6. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
7. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
8. Identify differences, similarities or changes related to simple scientific ideas and processes.
9. Use straightforward scientific evidence to answer questions or to support their findings.

<table>
<tr><th colspan="2">Autumn: Conflict</th></tr>
<tr><th colspan="2">How do teeth affect what humans and animals eat?
Animals including humans</th></tr>
<tr><td>Children Know :</td><td>Scientific enquiry question:
Which drinks cause the worst tooth decay?
Children learn to:</td></tr>
<tr><td rowspan="5">• Animals, including humans, cannot make their own food. They get their nutrition from what they eat.
• About simple food chains and can identify producers, predators and prey.
• The basic parts of the digestive system in humans and can describe the functions of it.
• The different types of teeth humans have and their uses.
• Humans and some animals have skeletons and muscles for support, protection and movement.

Scientific enquiry
• How to ask relevant questions and use different types of scientific enquiries to answer them.</td><td>Scientific enquiry statement 2
Place 5 boiled eggs in 5 different drinks and leave for a few days.
Orange juice, milk, cola, apple juice, water
Discuss fair testing</td></tr>
<tr><td>Scientific enquiry statement 3
Make daily observations and record in a table for 5 days.</td></tr>
<tr><td>Scientific enquiry statement 5
Record findings using simple scientific language, drawings, labelled diagrams, keys, and tables.</td></tr>
<tr><td>Scientific enquiry statement 6
Make a poster to put up in school to make other children aware of the drinks that are good/bad for your teeth.</td></tr>
<tr><td>Scientific enquiry statement 7
Children could think about making a new drink that is not so bad for the teeth.</td></tr>
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<table>
<tr><th colspan="2">Spring: Planet Earth (1st half)</th><th colspan="2">Spring: Planet Earth (2nd half term)</th></tr>
<tr><th colspan="2">How are magnets linked to the Arctic and the Antarctic?
Forces and magnets</th><th colspan="2">Is it ever really dark?
Light</th></tr>
<tr><td>Children Know:</td><td>Scientific enquiry question:
How do magnetic forces act through different materials?
Children learn to:</td><td>Children Know :</td><td>Scientific enquiry question:
Can the size of a shadow be changed?
Children learn to:</td></tr>
<tr><td rowspan="4">● How things move on different surfaces.
● That some forces need to touch but magnetic forces can act at a distance.
● That magnets attract and repel each other and will attract some materials but not others.
● Name some magnetic materials.
● They can group together a variety of everyday materials based on whether they are attracted to a magnet.
● Magnets have 2 poles.
● Whether magnets will attract or repel each other based on which poles are facing.</td><td>Scientific enquiry statement 2
Test to see which materials/objects will prevent a paperclip being magnetised to a magnet. Test 10 different objects/materials. Place different materials between a magnet and a paperclip.</td><td rowspan="4">● That they need light in order to see things and that dark is the absence of light.
● Some light sources we use when it has gone dark. (eg light bulbs, moon, street lamps…)
● That light is reflected from surfaces
● Light from the sun can be dangerous but there are ways we can protect our eyes.
● Shadows are formed when light is blocked by an object
● The size of shadows can change.

Scientific enquiry
● How to ask relevant questions and use different types of scientific enquiries to answer them.</td><td>Scientific enquiry statement 3
Measure the width or length of the shadow cast when a light source is at a range of distances.</td></tr>
<tr><td>Scientific enquiry statement 4
Predict then test each material/object and record in a table.</td><td>Scientific enquiry statement 5
Record results in a table and then on a graph.</td></tr>
<tr><td>Scientific enquiry statement 5
Use a table to record results</td><td>Scientific enquiry statement 7
After getting a few results, children predict what the size of the next shadow will be.</td></tr>
<tr><td>Scientific enquiry statement 8
What similarities/differences are there between the sorted materials?</td><td>Scientific enquiry statement 8
Use results to look for similarities, differences and patterns in data.

Scientific enquiry statement 3
Measure the size of the shadow cast when a light source is at a range of distances.</td></tr>
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<table>
<tr><th colspan="2">Summer: Britain</th></tr>
<tr><th colspan="2">What if we did not plant any plants or trees?
Plants</th></tr>
<tr><td>Children Know :</td><td>Scientific enquiry question
Can plants grow without soil?
Children learn to:</td></tr>
<tr><td rowspan="4">• The names of different plants and can describe the functions of different parts of flowering plants: roots, stem/trunk, leaves, and flowers.
• The things plants need for life and growth (air, light, water, nutrients from soil, and room to grow) and that these vary from plant to plant.
• That plants make their own food. (they do not need to understand how yet).
• How water is transported in plants (through investigation)
• That flowers are important in the lifecycle of flowering plants and can discuss pollination, seed formation and seed dispersal.

Scientific enquiry
• How to ask relevant questions and use different types of scientific enquiries to answer them.</td><td>Scientific enquiry statement 2
Plant the following plants in both soil and sand and monitor. A cactus, a tomato plant and cress.</td></tr>
<tr><td>Scientific enquiry statement 3
Observe the plants over a 4 week period. Decide on the variable to monitor. Amount of growth, colour etc.</td></tr>
<tr><td>Scientific enquiry statement 5
Make a series of observational drawings to show what is happening to the plants over the 4 weeks.</td></tr>
<tr><td>Scientific enquiry statement 7
Explain what happened to the plants and draw conclusions.</td></tr>
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<table>
<tr><th colspan="2">Autumn: Human Kind (1st half term)</th><th colspan="2">Autumn: Human kind (2nd half term)</th></tr>
<tr><td colspan="2">Do rocks stay the same forever?
Rocks</td><td colspan="2">How can water be a solid, a liquid and a gas?
States of matter</td></tr>
<tr><td>Children Know :</td><td>Scientific enquiry question:
Are all rocks as hard as each other?
Investigate the hardness of 8 rocks by scratching them
Children learn to:</td><td>Children Know:</td><td>Scientific enquiry question:
Do materials have different melting points?
Children learn to :</td></tr>
<tr><td rowspan="4">• That rocks can be grouped based on their appearance and physical properties.
• That fossils are formed when things that have lived get trapped inside rocks.
• Soils are made from rocks and organic matter.

Scientific enquiry
• How to ask relevant questions and use different types of scientific enquiries to answer them.</td><td>Scientific enquiry statement 2
Come up with ways to test the hardness of different rocks Eg sandpaper.</td><td rowspan="4">• They can group materials together into solids, liquids and gasses.
• Some materials change state when they are heated or cooled and we can measure the temperature when the changes happen.
• That as part of the water cycle, water evaporates and causes condensation and the rate that this happens is affected by the temperature.

Scientific enquiry
• How to ask relevant questions and use different types of scientific enquiries to answer them.</td><td>Scientific enquiry statement 2
Set up a test to find out the melting point of different materials. Test 3 different materials, ice, chocolate, butter.</td></tr>
<tr><td>Scientific enquiry statement 4
Classify rocks based on their tests.</td><td>Scientific enquiry statement 3
Predict then take the temperature of each melting point using a thermometer.</td></tr>
<tr><td>Scientific enquiry statement 5
Record findings in their own way.</td><td>Scientific enquiry statement 4
Record the temperatures.</td></tr>
<tr><td>Scientific enquiry statement 6
Attempt to place rocks in order of hardness.</td><td>Scientific enquiry statement 8
Children look for similarities, differences and patterns in data.</td></tr>
<tr><td></td><td>Scientific enquiry statement 7
Raise further questions from results such as the big question, do rocks stay the same forever?</td><td></td><td>Scientific enquiry statement 7
Children to think of other materials that might have similar melting points because they have similarities. eg lard/butter, ice cream/ice</td></tr>
<tr><td></td><td></td><td></td><td>Scientific enquiry statement 9
Children research the melting points of the materials that they suggested could have similar melting points.</td></tr>
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<table>
<tr><th colspan="2">Spring : Inventions (1st half term)</th><th colspan="2">Spring: Inventions (2nd half term)</th></tr>
<tr><td colspan="2">Why is a piece of wire made up of two different materials?
Electricity</td><td colspan="2">How do whales hear over long distances?
Sound</td></tr>
<tr><td>Children Know:</td><td>Scientific enquiry question:
Do all materials conduct electricity?

Children learn to:</td><td>Children know:</td><td>Scientific enquiry question:
Can we change the pitch and volume of sounds?
Children learn to:</td></tr>
<tr><td rowspan="4">• Common appliances that run on electricity.
• How to construct a simple series electrical circuit and can identify and name the basic parts including cells, wires, bubs, switches and buzzers.
• Whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery.
• That a switch opens and closes a circuit and links this with whether or not a lamp lights in a simple series circuit.
• Some common conductors and insulators and know that metals are good conductors.

Scientific enquiry
• How to ask relevant questions and use different types of scientific enquiries to answer them.</td><td>Scientific enquiry statement 2
Set up a comparative test.
Children test different items in a circuit to see if they are conductors or insulators and use this to help them answer the question.</td><td rowspan="4">• How sounds are made and that some of them come from vibrations.
• That vibrations from sounds travel through a medium to the ear.
• That there are patterns between the pitch of a sound and features of the object that produced it.
• That there are patterns between the volume of a sound and the strength of the vibrations.
• That sounds get fainter as the distance increases.

Scientific enquiry
• How to ask relevant questions and use different types of scientific enquiries to answer them.</td><td>Scientific enquiry statement 2
Set up a test to explore pitch.

Put different amounts of water in bottles and blow across the top to hear the pitch.</td></tr>
<tr><td>Scientific enquiry statement 4

Test different materials in a circuit to see if they are conductors or insulators.</td><td>Scientific enquiry statement 6
Children put the bottles in order of pitch and try to explain what they notice.</td></tr>
<tr><td>Scientific enquiry statement 5

Use a table and then a Venn diagram to show results.</td><td>Scientific enquiry statement 8
Can they identify any patterns?</td></tr>
<tr><td>Scientific enquiry statement 8

What similarities were there between all the conductors?</td><td>Scientific enquiry statement 9
Children use what they have learnt about sound to explain their findings.</td></tr>
<tr><td></td><td>Scientific enquiry statement 7
Use their findings to help answer the following question:
Why is a piece of wire made up of two different materials?</td><td></td><td></td></tr>
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<table>
<tr><th colspan="2">Summer: Civilisations</th></tr>
<tr><td colspan="2">What is happening to the rain forests?
Living things</td></tr>
<tr><td>Children Know :</td><td>Scientific enquiry question:
Is Rendlesham forest only home to squirrels and birds?
(possible trip to Rendlesham forest to survey living species)
Children learn to :</td></tr>
<tr><td rowspan="4">• That living things can be grouped in a variety of ways.
• That classification keys can help to group, identify and name a variety of living things in their local environment.
• That environments can change and that this can sometimes pose dangers to living things.

Scientific enquiry
• How to ask relevant questions and use different types of scientific enquiries to answer them.</td><td>Scientific enquiry statement 2
.Go on a trip to Rendlesham forest to look at all the different wildlife that live there.</td></tr>
<tr><td>Scientific enquiry statements 3 and 5
Document what you find at the forest through photographs, drawings etc.</td></tr>
<tr><td>Scientific enquiry statement 4
Group animals by where they live in the forest.</td></tr>
<tr><td>Scientific enquiry statement 6
Create a diorama (a 3d model of a landscape) showing the different layers of the forest and the animals that live in different places; on the forest floor, in the tree trunks, on top of the trees.</td></tr>
<tr><td></td><td>Scientific enquiry statement 7
Where else would these animals live if humans cut down the forest for wood or space?
Link back to main question, why are people cutting down rainforests…..</td></tr>
</table>

Planning grid and assessment

Lesson Not fixed- shorten or lengthen plan	***We are learning :*** ***(Taken from Med term plan, may go over more than one lesson)***	***stages of learning needed to acquire the knowledge*** ***(step by step learning to build the knowledge)***	***Resources /web links***	***Scaffolding to secure success***	***Learning Characteristics used (Hexagons)***	***Community engagement*** ***(final outcome of this unit)***	
1							
2							
3							
4							
5							
6							
7							

Assessment method used	***Knowledge not yet embedded***	***Knowledge securely embedded***
Quiz		
double page spread		
Discussion/debate		
final assessed piece		
test		
Other…		