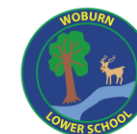


## Woburn Lower School - Science Key Knowledge Progression Map 2023/24



	Early Years	Key Stage 1		Key Stage 2	
Knowledge Strand	3 to 4 Year Olds, Children in Reception, Early Learning Goals	Year 1 - KS1	Year 2 - KS1	Year 3 - KS2	Year 4 - KS2
<b>Working Scientifically</b>	<p><i>Begin to make sense of their own life-story and family's history.</i></p> <p><i>Explore how things work. (UTW)</i></p> <p><i>Know and talk about the different factors that support their overall health and wellbeing:</i></p> <ul style="list-style-type: none"> <li>- regular physical activity</li> <li>- healthy eating</li> <li>- tooth brushing</li> <li>- sensible amounts of 'screen time'</li> <li>- having a good sleep routine</li> <li>- being a safe pedestrian (PSED)</li> </ul> <p><i>(ELGS) Personal, Social and Emotional Development Managing Self</i></p> <ul style="list-style-type: none"> <li>• <i>Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.</i></li> </ul>	<p>During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> <li>• asking simple questions and recognising that they can be answered in different ways;</li> <li>• observing closely, using simple equipment;</li> <li>• performing simple tests;</li> <li>• identifying and classifying;</li> <li>• using their observations and ideas to suggest answers to questions;</li> <li>• gathering and recording data to help in answering questions.</li> </ul>		<p>During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> <li>• asking relevant questions and using different types of scientific enquiries to answer them;</li> <li>• setting up simple practical enquiries, comparative and fair tests;</li> <li>• making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers;</li> <li>• gathering, recording, classifying and presenting data in a variety of ways to help in answering questions;</li> <li>• recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables;</li> <li>• reporting on findings from enquiries, including oral and written explanations, displays or</li> </ul>	

			<p>presentations of results and conclusions;</p> <ul style="list-style-type: none"> <li>• using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions;</li> <li>• identifying differences, similarities or changes related to simple scientific ideas and processes;</li> <li>• using straightforward scientific evidence to answer questions or to support their findings.</li> </ul>
<p><b>Asking Questions and Carrying Out Fair and Comparative Tests</b></p>	<ul style="list-style-type: none"> <li>• Understand 'why' questions, like: "Why do you think the caterpillar got so fat?" (Communication and Language)</li> <li>• Learn new vocabulary.</li> <li>• Ask questions to find out more and to check what has been said to them.</li> <li>• Articulate their ideas and thoughts in well-formed sentences.</li> <li>• Describe events in some detail.</li> <li>• Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen.</li> <li>• Use new vocabulary in different contexts. (Communication and Language)</li> </ul> <p>(ELGS) Communication and Language</p>	<p><b>KS1 Science National Curriculum</b></p> <p>Asking simple questions and recognising that they can be answered in different ways. Performing simple tests.</p> <p>. Children can:</p> <ol style="list-style-type: none"> <li>explore the world around them, leading them to ask some simple scientific questions about how and why things happen;</li> <li>begin to recognise ways in which they might answer scientific questions;</li> <li>ask people questions and use simple secondary sources to find answers;</li> </ol>	<p><b>Lower KS2 Science National Curriculum</b></p> <p>Asking relevant questions and using different types of scientific enquiries to answer them.</p> <p>Setting up simple practical enquiries, comparative and fair tests.</p> <p>Children can:</p> <ol style="list-style-type: none"> <li>start to raise their own relevant questions about the world around them in response to a range of scientific experiences;</li> <li>start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions;</li> <li>recognise when a fair test is necessary;</li> <li>help decide how to set up a fair test, making decisions about what observations to make,</li> </ol>

	<p>Listening, Attention and Understanding</p> <ul style="list-style-type: none"> <li>• Make comments about what they have heard and ask questions to clarify their understanding.</li> </ul>	<ul style="list-style-type: none"> <li>d carry out simple practical tests, using simple equipment;</li> <li>e experience different types of scientific enquiries, including practical activities;</li> <li>f talk about the aim of scientific tests they are working on;</li> <li>g with support, start to recognise a fair test.</li> </ul>	<ul style="list-style-type: none"> <li>how long to make them for and the type of simple equipment that might be used;</li> <li>e set up and carry out simple comparative and fair tests.</li> </ul>
<p><b>Observing and Measuring Changes</b></p>	<ul style="list-style-type: none"> <li>• Make healthy choices about food, drink, activity and tooth brushing. (PSED)</li> <li>• Plant seeds and care for growing plants.</li> <li>• Understand the key features of the life cycle of a plant and an animal.</li> <li>• Begin to understand the need to respect and care for the natural environment and all living things.</li> <li>• Explore and talk about different forces they can feel.</li> <li>• Talk about the differences between materials and changes they notice. (UTW)</li> <li>• Explore the natural world around them.</li> <li>• Describe what they see, hear and feel while they are outside.</li> <li>• Recognise some environments that are different to the one in which they live.</li> <li>• Understand the effect of changing seasons on the natural world around them.</li> </ul>	<p><b>KS1 Science National Curriculum</b></p> <p>Observing closely, using simple equipment.</p> <p>Children can:</p> <ul style="list-style-type: none"> <li>a observe the natural and humanly constructed world around them;</li> <li>b observe changes over time;</li> <li>c use simple measurements and equipment;</li> <li>d make careful observations, sometimes using equipment to help them observe carefully</li> </ul>	<p><b>Lower KS2 Science National Curriculum</b></p> <p>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</p> <p>Children can:</p> <ul style="list-style-type: none"> <li>a make systematic and careful observations;</li> <li>b observe changes over time;</li> <li>c use a range of equipment, including thermometers and data loggers;</li> <li>d ask their own questions about what they observe;</li> </ul> <p>where appropriate, take accurate measurements using standard units using a range of equipment.</p>

	<p>(UTW)</p> <p>ELGs UTW -The Natural World</p> <p>Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.</p>		
<p><b>Identifying, Classifying, Recording and Presenting Data</b></p>	<p>Learn new vocabulary.</p> <p>Ask questions to find out more and to check what has been said to them.</p> <p>Articulate their ideas and thoughts in well-formed sentences.</p> <p>Describe events in some detail.</p> <p>Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen.</p> <p>Use new vocabulary in different contexts (C &amp; L)</p>	<p><b>KS1 Science National Curriculum</b></p> <p>Identifying and classifying. Gathering and recording data to help in answering questions. Children can:</p> <ul style="list-style-type: none"> <li>a use simple features to compare objects, materials and living things;</li> <li>b decide how to sort and classify objects into simple groups with some help;</li> <li>c record and communicate findings in a range of ways with support;</li> <li>d sort, group, gather and record data in a variety of ways to help in answering questions such as in simple sorting diagrams, pictograms, tally charts, block diagrams and simple tables.</li> </ul>	<p><b>Lower KS2 Science National Curriculum</b></p> <p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</p> <p>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>Children can:</p> <ul style="list-style-type: none"> <li>a talk about criteria for grouping, sorting and classifying;</li> <li>b group and classify things;</li> <li>c collect data from their own observations and measurements;</li> <li>d present data in a variety of ways to help in answering questions;</li> <li>e use, read and spell scientific vocabulary correctly and with confidence, using their growing word reading and</li> <li>f spelling knowledge;</li> <li>g record findings using scientific language,</li> </ul>

			drawings, labelled diagrams, keys, bar charts and tables.
<b>Drawing Conclusions, Noticing Patterns and Presenting Findings</b>	<ul style="list-style-type: none"> <li>• Use all their senses in hands-on exploration of natural materials.</li> <li>• Explore collections of materials with similar and/or different properties.</li> <li>• Talk about what they see, using a wide vocabulary (UTW)</li> </ul> <p>Explore the natural world around them.</p> <p>Describe what they see, hear and feel while they are outside. (UTW)</p> <p>Learn new vocabulary.</p> <p>Ask questions to find out more and to check what has been said to them.</p> <p>Articulate their ideas and thoughts in well-formed sentences.</p> <p>Describe events in some detail.</p> <p>Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen.</p>	<p><b>KS1 Science National Curriculum</b></p> <p>Using their observations and ideas to suggest answers to questions.</p> <p>Children can:</p> <ul style="list-style-type: none"> <li>a notice links between cause and effect with support;</li> <li>b begin to notice patterns and relationships with support;</li> <li>c begin to draw simple conclusions;</li> <li>d identify and discuss differences between their results;</li> <li>e use simple and scientific language;</li> <li>f read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1;</li> </ul> <p>talk about their findings to a variety of audiences in a variety of ways.</p>	<p><b>Lower KS2 Science National Curriculum</b></p> <p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</p> <p>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p> <p>Children can:</p> <ul style="list-style-type: none"> <li>a draw simple conclusions from their results;</li> <li>b make predictions;</li> <li>c suggest improvements to investigations;</li> <li>d raise further questions which could be investigated;</li> <li>e first talk about, and then go on to write about, what they have found out;</li> </ul> <p>report and present their results and conclusions to others in written and oral forms with increasing confidence.</p>

Use new vocabulary in different contexts  
(C & L)

(ELGS) Understanding the World The  
Natural World

- Explore the natural world around them, making observations and drawing pictures of animals and plants.
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter

<p><b>Using Scientific Evidence and Secondary Sources of Information</b></p>	<p>Explore the natural world around them. Describe what they see, hear and feel while they are outside. (UTW)</p> <p>Learn new vocabulary.</p> <p>Ask questions to find out more and to check what has been said to them.</p> <p>Articulate their ideas and thoughts in well-formed sentences.</p> <p>Describe events in some detail.</p> <p>Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen.</p> <p>Use new vocabulary in different contexts (C &amp; L)</p>		<p><b>Lower KS2 Science National Curriculum</b></p> <p>Identifying differences, similarities or changes related to simple scientific ideas and processes.</p> <p>Using straightforward scientific evidence to answer questions or to support their findings.</p> <p>Children can:</p> <ul style="list-style-type: none"> <li>a make links between their own science results and other scientific evidence;</li> <li>b use straightforward scientific evidence to answer questions or support their findings;</li> <li>c identify similarities, differences, patterns and changes relating to simple scientific ideas and processes;</li> <li>d recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations.</li> </ul>
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**Specific learning objectives for Year 1**

**ANIMALS INCLUDING HUMANS**

- I know how to describe and compare observable features of animals from a range of groups
- I know how to group animals according to what they eat
- I know how to identify and name a variety of common animals including fish, amphibians, reptiles, mammals and birds
- I know how to identify and name a variety of common animals that are carnivores, herbivores and omnivores
- I know how to name and locate parts of the human body, including those related to the senses
- I know how to describe and compare observable features of animals from a range of groups
- I know how to describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)
- I know how to identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense
- I know how to take care of animals taken from their habitat and understand the need to return them safely to their homes
- I know how to use the vocabulary and identify: head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth and teeth.

**•EVERYDAY MATERIALS**

I know how to distinguish objects from materials, describe their properties, identify and group everyday materials

- I know how to distinguish between an object and the material from which it is made
- I know how to identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock
- I know how to describe the simple physical properties of a variety of everyday materials
- I know how to compare and group together a variety of everyday materials on the basis of their simple physical properties

**SEASONAL CHANGES**

I know how to observe and describe changes across the four seasons

- I know how to observe and describe weather associated with the seasons and how day length varies
- I know that it is not safe to look directly at the sun, even when wearing dark glasses



## PLANTS

I know how to identify and name a variety of common wild and garden plants, including deciduous and evergreen trees

- I know how to identify and describe the basic structure of a variety of common flowering plants, including trees
- I know how to identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.

**Specific Learning Objectives for Year 2.**

**ANIMALS INCLUDING HUMANS**

- I know how to name and locate parts of the human body, including those related to the senses and describe them
- I know how to describe the basic needs of animals for survival and the main changes as offspring from young animals, including humans, grow into adults
- I know how to group animals according to what they eat, describe how animals get their food from other animals and/or plants, and use simple food chains to describe these relationships
- I know how to describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene
- I know how to describe the basic needs of animals, including humans, for survival (water, food and air

**EVERYDAY MATERIALS**

I know how to distinguish objects from materials, describe their properties, identify and group everyday materials and compare their suitability for different uses

- I know how to identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses
- I know how to describe how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching

Plants • I know how to describe the basic needs of plants for survival and the impact of changing these and the main changes as seeds and bulbs grow into mature plants

- I know how to observe and describe how seeds and bulbs grow into mature plants
- I know how to find out and describe how plants need water, light and a suitable temperature to grow and stay healthy

**LIVING THINGS AND THEIR HABITATS**

- I know how to identify whether things are alive, dead or have never lived
- I know how to explore and compare the differences between things that are living, dead, and things that have never been alive
- I know how to name different plants and animals and describe how they are suited to different habitats
- I know how to identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other

I know how to identify and name a variety of plants and animals in their habitats, including micro-habitats

I know how to describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food

To look at the work of famous scientists.

**Specific learning objectives for Year 3**

**ANIMALS INCLUDING HUMANS**

- I know how to identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat
- I know how to identify that humans and some other animals have skeletons and muscles for support, protection and movement

**FORCES**

- I know how to compare how things move on different surfaces
- I know how to notice that some forces need contact between two objects, but magnetic forces can act at a distance
- I know how to compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials
- I know how to describe magnets as having two poles
- I know how to predict whether two magnets will attract or repel each other, depending on which poles are facing

**MAGNETS**

- I know how to compare how things move on different surfaces
- I know how to notice that some forces need contact between two objects, but magnetic forces can act at a distance
- I know how to compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials
- I know how to describe magnets as having two poles

**ROCKS**

- I know how to compare and group together different kinds of rocks on the basis of their appearance and simple physical properties
- I know how to describe in simple terms how fossils are formed when things that have lived are trapped within rock
- I know how to recognise that soils are made from rocks and organic matter.

**PLANTS**

- I know how to identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers
- I know how to explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant

• I know how to investigate the way in which water is transported within plant

I know how to explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal

#### LIGHT

• I know how to recognise that he/she needs light in order to see things and that dark is the absence of light

• I know how to notice that light is reflected from surfaces

• I know how to recognise that light from the sun can be dangerous and that there are ways to protect eyes

• I know how to find patterns in the way that the size of shadows change

• I know that it is not safe to look directly at the sun, even when wearing dark glasse

**Specific Learning objectives for Year 4**

**ANIMALS INCLUDING HUMANS**

- I know how to describe the simple functions of the basic parts of the digestive system in humans
- I know how to identify the different types of teeth in humans and their simple functions
- I know how to construct and interpret a variety of food chains, identifying producers, predators and prey

**STATES OF MATTER**

- I know how to compare and group materials together, according to whether they are solids, liquids or gases
- I know how to observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius ( $^{\circ}\text{C}$ )
- I know how to identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature

**ELECTRICITY**

- I know how to identify common appliances that run on electricity
- I know how to construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers Identify 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
- I know how to recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit
- I know how to recognise some common conductors and insulators, and associate metals with being good conductors

**LIVING THINGS AND THEIR HABITAT**

- I know how to recognise that living things can be grouped in a variety of ways
- I know how to explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
- I know how to recognise that environments can change and that this can sometimes pose dangers and have an impact on living things

**SOUND**

- I know how to identify how sounds are made, associating some of them with something vibrating
- I know how to recognise that vibrations from sounds travel through a medium to the ear
- I know how to find patterns between the pitch of a sound and features of the object that produced it
- I know how to find patterns between the volume of a sound and the strength of the vibrations that produced it
- I know how to recognise that sounds get fainter as the distance from the sound source increases

**CORE LANGUAGE PROGRESSION**

	<b>Early Years</b>	<b>KS1</b>	<b>KS2</b>
<b>Speaking like a scientist</b>	Question Same Different Find out Ask Answer	Question Answer Observe Equipment Identify Classify Sort Group Record Diagram Chart Data Compare Describe Similarities Differences Tally Tables Charts Diagrams Predict Research	Scientific enquiry Comparative test Fair test Systematic Careful observation Accurate measurements Gather Record Thermometer Data logger Classify Present Key Bar chart Explanation Conclusion Prediction Changes Evidence Construct Interpret Plan
<b>Topic Specific Vocabulary</b>			

Early Years Topic specific Vocabulary	Year 1	Year 2	Year 3	Year 4
<p><b>Animals including Humans Vocabulary:</b> fox, spider, hedgehog, squirrel, badger, bat, owl, insect, wild animal, hibernate, nocturnal, carnivore, herbivore, head, body, arms, legs, feathers, fur, wings, beak</p> <p><b>Everyday Materials Vocabulary:</b> material, wood, plastic, rock, pebble, brick, glass, paper, hard, soft, opaque, shiny, transparent, float, sink, solid, melt</p> <p><b>Seasonal Changes Vocabulary:</b> weather, rain, snow, hail, sleet, wind, sun, rainbow, warm, hot, cold, seasons, autumn, spring, summer, winter, day, night, sunlight</p> <p><b>Plants Vocabulary:</b> leaf, flower, petal, root, stem, soil, sunflower, pine cone, seed, acorns, water, beans, peas, lettuce, tomato, potato.</p>	<p><b>Animals including Humans Vocabulary:</b> head, body, eyes, ears, mouth, teeth, tail, leg, wing, claw, fin, scales, feathers, fur, beak, paw, hoof, arm</p> <p><b>Everyday Materials Vocabulary:</b> object, material, wood, plastic, glass, metal, rock, brick, paper, fabric, elastic, foil, rubber, wool, hard, soft, stretchy, stiff, bendy, waterproof, absorbent, brittle, shiny, dull, transparent, opaque</p> <p><b>Seasonal Changes Vocabulary:</b> weather, climate, windy, sunny, rainy, snowy, season, winter, spring, summer, autumn, temperature, tornado, lightning, thunder, rainfall, sunrise, sunset, horizon, day length, daylight, night-time,</p>	<p><b>Animals including Humans Vocabulary:</b> offspring, reproduction, adolescent, caterpillar, hygiene, germs, protein, carbohydrate, fat, nutrient, life cycle</p> <p><b>Everyday Materials Vocabulary:</b> object, material, wood, plastic, glass, metal, rock, brick, paper, fabric, elasticity, foil, rubber, wool, hard, soft, stretchy, rigid, flexible, waterproof, absorbent, brittle, shiny, dull, transparent, opaque, reflective, non-reflective, translucent, plasticity</p> <p><b>Plants Vocabulary:</b> leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud, bulb,</p>	<p><b>Animals including Humans Vocabulary:</b> protein, carbohydrate, fat, nutrient, sugars, nutrition, vitamins, minerals, skeleton, bones, fibre, water, muscle, digestion, skull, ribs, spine, joints</p> <p><b>Forces and Magnets Vocabulary:</b> force, push, pull, twist, contact force, non-contact force, magnetism, magnet, attract, repel, magnetic material, iron, steel, neodymium, magnadur magnet, pole, friction, magnetic field</p> <p><b>Rocks Vocabulary:</b> sedimentary, igneous, metamorphic, fossil, soil, porous, weathering, mineral, crystal, texture, hardness, drainage</p> <p><b>Plants Vocabulary:</b> photosynthesis, pollen, pollination, seed dispersal, anther, filament, stigma, style,</p>	<p><b>Animals including Humans Vocabulary:</b> digestion, digestive system, mouth, teeth, saliva, oesophagus, stomach, small intestine, large intestine, rectum, anus, incisor, canine, molar, herbivore, premolar, carnivore, omnivore, producer, predator, prey, apex predator, food chain, food web</p> <p><b>States of Matter Vocabulary:</b> state of matter, change of state, solid, liquid, gas, melting, freezing, solidify, melting point, boiling point, evaporation, condensation, temperature, water cycle, precipitation, cloud</p> <p><b>Electricity Vocabulary:</b> electricity, appliance, mains, plug, circuit, complete circuit, open circuit, cell, battery, electrode, positive, negative, connection, crocodile clip, bulb, bulb holder, switch, buzzer, motor, component, conductor, insulator, wire, metal, non-metal, circuit symbol</p>



	<p>thermometer, rain gauge</p> <p><b>Plants Vocabulary:</b> leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud, bulb, germination</p>	<p>germination, shade, nutrient</p> <p><b>Living things and their habitats Vocabulary:</b> living, dead, never been alive, habitat, food chain, grassland, forest, pond, woodland, desert, ocean, polar, microhabitat, excretion, reproduction, respiration, mountainous, rive</p>	<p>ovule, ovary, fertilisation, stomata, transpiration, xylem</p> <p><b>Light Vocabulary:</b> light, light source, dark, transparent, translucent, opaque, shiny, matt, shadow, reflection</p>	<p><b>Living things and their habitats Vocabulary:</b> classification, classification key, human impact, positive, environment, habitat, negative, migration, hibernate, extinct</p> <p><b>Sound Vocabulary:</b> sound, source, vibrate, vibration, travel, pitch, frequency, volume, faint, loud, insulation, solid, liquid, gas, dissipate, spread</p>
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