

Science Bug: Practical Activities

Year	Unit	Lesson	Activity title	Description	Materials Required
1	Parts of Animals	3	Using the sense of smell	Children smell clean socks on a washing line which have objects with various smells inside them and identify the objects using only their sense of smell.	Washing line; pegs; socks; scented oils on cotton wool/scented objects.
1	Parts of Animals	3	Using the sense of taste	Children identify the flavours of four jellies with identical colouring using their sense of taste.	Disposable bowls and spoons; four different-flavoured jellies per child; black food colouring.
1	Parts of Animals	4	Investigating touch	Children use their sense of touch to identify objects in 'feely bags'.	Opaque 'feely' bags; a selection of objects to feel and describe (e.g. shell, fir cone, sponge, hair brush, cotton wool).
1	Parts of Animals	4	Investigating hearing	Children go on a 'Listening walk' around school to record and collect sounds. They then create a map showing where each sound was collected.	Tape recorders/digital recording devices; a display board with an outline map of the school; talking postcards (small whiteboards with mini recording devices embedded in them) or other mini recording devices; paper elephant ears stapled onto paper headbands.
1	Changing Seasons	2	Making a weather station	Children create a class weather station and collect data about rainfall, temperature and wind speed.	Plastic bottle; thermometers; scissors; sticky tape; rulers; pencils; lolly sticks; tissue paper.
1	Changing Seasons	4	Observing the weather	Children are given different containers to fill with water of varying temperatures. They order the containers from coldest to warmest before testing each with a simple thermometer.	Plastic bowls/cups; simple thermometers.
1	Changing Seasons	5	Observing seasonal changes to nature	At least twice in each season, children go on a hunt outside to observe seasonal changes to nature.	Cameras; paper and clipboards; magnifying glasses; pots; tape measures; bug boxes

Year	Unit	Lesson	Activity title	Description	Materials Required
1	Plants	1	Naming popular plants	Outside, children sow seeds, make labels for their plants and learn how to plant them in soil.	Small, flowering bedding plants and small vegetable seedlings; grow-bags (if no outdoor garden area is available); small hand tools (trowels); plant labels; watering can; pens.
1	Plants	2	Hunting for leaves	Outside, children play a leaf hunt game to find different types of leaves. They then match the leaves they find to laminated pictures.	Mini whiteboards and pens; selection of local leaves (include tree leaves); laminated local tree leaves; sticky labels.
1	Plants	5	Making a helpful herbarium	Children make a herbarium of plants found on the school field.	Small trowels; paper envelopes; newspaper; blotting paper or absorbent kitchen towel; heavy books for pressing; cartridge paper; glue.
1	Comparing Materials	1	Describing and comparing materials	Children pass around a feely bag with different materials inside and describe what they feel using as many properties as they can while others try to guess the material.	Feely bag; samples of different materials, e.g. wood; metal; plastic; rubber; teddy bear fur; towelling; nylon; wool; sponge; cotton wool; paper; cardboard; brick; ceramics and rock.
1	Comparing Materials	4	Exploring slime	Children explore five different types of bought and homemade slime and record words to describe each of them. They then answer questions about the slime by carrying out comparative tests.	Different types of homemade (recipes are easily available) and bought slime in different thicknesses/colours; transparent plastic cups; plastic plates; plastic knives, forks and spoons; lolly sticks; cardboard; sticky notes; flip chart paper; tape measures; simple timers.
1	Comparing Materials	5	Floating and sinking	Children test a sample of materials to see whether they float or sink in water.	A block of wood from a DIY store and a similar sized piece of glass; large bowls of water; bags containing material samples of wood, metal, plastic, rubber, polystyrene, cardboard, paper and ceramic; bags containing objects made from sample materials; 5 cm squares of

Year	Unit	Lesson	Activity title	Description	Materials Required
					tissue, toilet paper, kitchen roll and paper towel.
1	Comparing Materials	6	Testing transparency	Children are given a torch and materials to test transparency. They sort the materials into groups: those that let light through, those that let a little light through and those that don't let any through.	A torch for each group; cellophane; fleece blanket; selection of different materials in squares large enough to cover the end of a torch; fabrics of different types and thicknesses, grease proof paper, aluminium foil; bubble wrap.
1	Types of Animals	1	Hunting for animals	Children go on an animal hunt in the school grounds, finding and documenting animals and animal clues that they find.	Clipboards; digital cameras.
1	Identifying Materials	2	Hunting for materials	In pairs, children are given a toy and they identify which material it is made from and try to find other toys or objects made from the same material. They go on a hunt around the school and grounds to find something made from each of the different materials in the toy box.	Shoe boxes or photocopy paper boxes containing toys made from a variety of different materials, including a piece of wooden doll's house furniture, a bag of glass marbles, a metal toy car, a fur teddy bear, a fabric finger or hand puppet, a plastic windup toy, a rubber stretch toy, a paper plane, a sponge ball, and a tub of modelling clay; small transparent bags; digital cameras.
1	Identifying Materials	3	Identifying materials that are liquids	In groups, children are given plastic cups containing samples of different liquids and are asked to name them by placing correct name cards next to them. Children then group the liquids according to different criteria, first predicting the characteristics of each liquid, then testing their predictions.	Selection of different liquids including water, orange squash, baby oil, cooking oil, colourless bubble bath, coloured bubble bath, syrup and black treacle, etc; baby wipes, kitchen roll or paper towels; transparent plastic cups; blindfold; plastic plates; tea spoons; droppers; straws; mini dry wipe boards; trays; food colouring; flipchart paper; digital cameras.
1	Identifying Materials	4	Matching objects to	On examining samples of different materials, children play a matching-type	Samples of wood, plastic, glass, metal, cloth, fake fur, paper and card; timers; large sheets of paper.

Year	Unit	Lesson	Activity title	Description	Materials Required
			suitable materials	game in groups, pairing up object cards with suitable material cards.	
1	Identifying Materials	5	Investigating protective packaging	Children plan and carry out a test to find out which is the best material to wrap a chocolate figure/egg in to protect it in the post.	Small delicate hollow chocolate eggs/figures in a box that appears to have arrived through the post; suitably sized squares of materials to wrap up the chocolates including bubble wrap, fake fur, thin washing up sponge, cotton wool from a roll (not balls), towelling, fleece, and tissue; sticky tape and scissors.
1	Identifying Materials	6	Exploring powders	Children explore three different powdered solids by mixing small amounts of each powder with water. Children do the same test using magic sand and think about how it is different from normal sand.	Trays containing plastic tubs half full of sand, magic sand, sugar and talcum powder; teaspoons; funnels; sieves; water; plastic cups; digital cameras.
2	Uses of Materials	1	Identifying common materials	Children explore the different materials and play 'Altogether, Show Me', lifting up a named material from those in their collection. They then go on hunts for objects made entirely out of one material and out of combination of materials, naming the latter.	Material samples, including wood, metal, plastic, glass, brick, rock, paper, cardboard, rubber and different fabrics.
2	Uses of Materials	2	Looking at objects' materials and their suitability	Children collect and test whether objects from the classroom can be used to write or make scratch marks.	Material samples including wood, different metals, plastic, glass, brick, rock, paper, tissue paper, cardboard, rubber, different fabrics, catalogues, magazines and forks made out of plastic, metal and wood.
2	Uses of Materials	3	Finding facts about materials	Children explore cornflour slime by stirring it and by using their hands to roll and push it.	Cornflour slime (cornflour and water mixed to a thick paste); spoons; small transparent plastic cups.

Year	Unit	Lesson	Activity title	Description	Materials Required
2	Uses of Materials	4	Exploring how easily different materials rip	Children test the strength of different materials by pulling strips of the materials to discover how easily they rip.	2 cm x 10 cm strips of different materials, including tissue, textured tissue, kitchen roll of different types, newspaper, writing paper, cleaning cloth, thin washing-up sponge, cling film and carrier-bag plastic.
2	Uses of Materials	4	Exploring absorbency	Children explore absorbency of different materials by pouring water on instant snow and drying hands on a paper towel.	Instant snow; transparent 25ml plastic cups; coloured paper towels.
2	Uses of Materials	4	Testing absorbency	Children test different materials to find out which are the most absorbent.	Cups of water; spoons; trays; samples of different materials including kitchen roll, paper towel, cleaning cloth, thin washing up sponge, cling film and tin foil.
2	Uses of Materials	5	Investigating how waterproof materials are	Children test how waterproof different materials are by dropping water onto the samples.	Examples of waterproof clothing; wellington boots; an umbrella; a tent (if possible); droppers; cups of water; 10cm-square samples of cling film, carrier-bag plastic, metal foil, tissue, paper towel and kitchen roll.
2	Uses of Materials	6	Applying learning about materials to design a perfect nappy	Children explore what a nappy is made out of by disassembling it. They then make a nappy themselves, choosing the necessary materials out of the collection provided.	Babies' nappies (one per small group); scissors; sticky tape; glue; cling film; plastic carrier bags; metal foil; tissue; paper towels; kitchen roll; cotton wool; sponge; towels; instant snow.
2	Living Things	1	Classifying living and non-living things	In groups, children go on a 'hunt' around school to find different types of living and non-living things. They record these either as digital photographs or as notes and then discuss their features.	Large sheets of paper labelled 'Alive' and 'Not alive'; digital cameras; a living thing (e.g. a plant or goldfish); a non-living thing (e.g. a rock or glass).
2	Living Things	2	Comparing a baby and a doll	Children compare a doll with the baby invited into the classroom and then record similarities and differences between them.	A realistic, plastic baby doll.

Year	Unit	Lesson	Activity title	Description	Materials Required
2	Living Things	2	Creating a checklist and collage of what makes something alive	Children explore and discuss a selection of mechanical objects and talk about how some non-living things can be similar to living things despite not being alive.	A selection of toys or mechanical items with features of living things (e.g. mechanical or wind-up toys that can move and/or make sounds).
2	Growing Plants	1	Investigating bulbs	Children plant bulbs in transparent cups with stones or marbles and water. They observe the roots and shoots growing in different conditions, monitoring their growth over the coming weeks.	Selection of flower bulbs; vinyl or latex gloves (check for allergies); hand lenses; knife and cutting board; transparent cups; small stones or marbles; pairs of prepared plants, e.g. basil plants.
2	Growing Plants	2	Keeping plants healthy	Children observe plants that have been kept in different conditions and decide which plant is the healthiest.	Pairs of prepared plants from Lesson 1, e.g. basil plants.
2	Growing Plants	3	Measuring plant growth	Children plant fast-growing plants in egg boxes and mark their growth.	Plastic egg cartons; scissors; sticky tape; cotton wool balls; fast growing seeds such as cress, radish or lettuce mixes; rulers; strips of paper; digital cameras.
2	Growing Plants	3	Picking up seeds	Children collect seeds on socks while walking around the school field, then place each in a plastic food bag, spray the contents with water, tape to a warm, sunny window and observe the growth.	Old adult socks; plastic food bag; sticky tape.
2	Growing Plants	4	Planting seeds	Children plant quick germinating seeds in transparent containers and observe germination at regular intervals.	Selection of seeds from Lesson 1; selection of fast germinating/growing seeds, e.g. radish, sunflower, marrow, beans (all sorts) pumpkins, marigolds; fully grown fruits or plants for which you have seeds (as above); broad bean seeds; plastic tumblers; kitchen paper; digital camera; small plant pots; compost; plastic sandwich bags; sticky tape; damp sand; begonia seeds;

Year	Unit	Lesson	Activity title	Description	Materials Required
					coconut; disposable metal cooking tray; cotton wool on a roll.
2	Growing Plants	5	Finding seeds	Children cut open fruit, flowers and vegetables to test whether there are seeds inside.	Basket of seasonal seed bearing fruits (e.g. avocado, orange, passion fruit, apricot, peach, tomato, cucumber, melon, pumpkin, lemon) and vegetables which do not have seeds contained in them (e.g. parsnip, carrot); selection of seeds collected from school grounds or woodlands (e.g. pinecones, ash, sycamore, chestnut); sharp knife and cutting board (for teacher), plastic knives (for children); kitchen paper; IT resources and reference materials on exotic fruits.
2	Growing Plants	6	Dissecting beans	Children dissect a bean to discover what is inside.	Broad bean seeds; pre-soaked broad bean seeds (and other bean seeds); hand lenses.
2	Changing Shape	1	Creating shapes with modelling dough	In pairs, children mould a large lump of modelling dough into a shape of their choosing. They record the shapes they make and the skills they used to create the shapes.	Modelling dough.
2	Changing Shape	1	Changing the shape of different materials	Using different materials, children explore how flexible, squashy, twisty and/or stretchy each material is.	Elastic bands; paper; pipe cleaners; modelling clay; plastic bags; plastic cubes; metal forks; wooden spoons; bath sponges; string; stones; tinfoil.
2	Changing Shape	2	Identifying common features of materials	Children explore and identify a selection of materials which will stretch the most and the materials that will stretch the least.	Elastic bands; modelling clay; tights; cling film; hair tie.
2	Changing Shape	2	Experimenting with putty	Children compare how far different-sized balls of putty stretch.	Putty; plastic tray; whiteboard markers; stopwatches; rulers; strips of paper; scissors; protective gloves.

Year	Unit	Lesson	Activity title	Description	Materials Required
2	Changing Shape	2	Making putty	Children make their own putty in class and squash, twist and bend it.	Liquid starch; white glue; food colouring; mixing bowls; mixing spoons; sealable plastic bags; protective gloves.
2	Changing Shape	3	Investigating bendy materials	Children make predictions and then test rulers of different types of material to find out which are the most and the least bendy.	Rulers made from different materials, e.g. wood, metal and plastic.
2	Changing Shape	3	Making art from cutlery	Children experiment with modelling clay, warming it up and making it more bendy. They then recreate some of the cutlery artwork they were shown previously.	Cold modelling clay; metal knives, forks and spoons.
2	Changing Shape	3	Comparing bendy materials	Children create a score board for bendiness of different materials and collect examples of materials for each number on the board.	A variety of flexible objects including fabric, pipe cleaners, string, sponge, card and paper.
2	Changing Shape	4	Exploring twisted materials	Children identify how the shape of different twisted materials has been changed using a digital microscope or set of hand lenses. They observe a range of materials that are both tightly and loosely woven and identify the differences and similarities between them.	Wool; string; rope; springs; twisted sweet wrappers; spiral bound books; pipe cleaners; digital microscope/hand lenses; paper straws; tightly woven (e.g. cotton t-shirts and shirts, school trousers, waterproof coat, etc.) and loosely woven fabrics (e.g. knitted jumpers, dishcloths, socks, tights, etc.).
2	Changing Shape	4	Investigating the strength of different threads	Children investigate rope twisting and the number of individual strands in different types of thread before testing the strength of thread.	Sewing thread; embroidery thread; wool; gardening string; parcel string; sticky-tack; pencil; small plastic bags with handles (available at pet stores); marbles; weights; extra strong paperclips.
2	Changing Shape	4	Making balloon animals	Children make their own balloon animals after observing how it is done and describing what changes take place.	Model making balloons; balloon pump; some examples of simple balloon animals.

Year	Unit	Lesson	Activity title	Description	Materials Required
2	Changing Shape	5	Investigating whether objects can be squashed	Children squash balloons against different surfaces or objects and observe how they change shape. They then investigate what will happen when different materials are squashed.	Balloons (translucent); a selection of materials including tomatoes, potatoes, sponges, soap, empty fizzy drinks bottles, full fizzy drinks bottles, cotton wool, tea towels, cushions, toy building bricks, bananas, apples; large bowls or trays; digital cameras.
2	Changing Shape	5	Working with modelling dough	In groups, children make their own dough and create a model or shape out of it. They make observational drawings or create annotated photographs to record how the dough changes.	Air-tight container; cooking scales; bowls; plain flour; table salt; water; vegetable oil; measuring cups; measuring spoons; large mixing bowls; digital cameras; protective gloves.
2	Changing Shape	6	Making art by changing the shape of materials	Children create a model of an animal using modelling dough, recording what skills were required to create their model.	Modelling dough from Lesson 5 (if it's not useable, new dough will need to be prepared before the lesson); cooker; rolling pins; modelling tools; flip chart paper.
2	Habitats	3	Going on a minibeast safari	Children go on a school safari looking for micro-habitats. They record the number and type of minibeasts they can find and present their findings.	Flipchart paper; magnifying lenses; digital cameras.
2	Habitats	4	Looking at a pond habitat	Children visit a pond where they take photos and make field sketches of the creatures and plants they find.	Magnifying lenses; white plastic containers; nets; plant and animal field guides on pond life; digital cameras.
2	Habitats	5	Hunting for worms	In groups, children investigate plots around the school and practise worm charming. As the worms emerge, children place them in their worm box, investigating the conditions of the worms' habitats.	Pegs and string; trowels or garden forks; watering cans; plastic cups or boxes to hold worms; map of school grounds; 'hat' or feely bag; tokens; tape measures; digital balances; a camera to photograph evidence.
2	Feeding and exercise	2	Classifying food	Children examine food packaging exploring the most important ingredients and discuss if they are 'animal', 'plant' or 'both'.	Flip chart paper; selection of food packaging showing ingredients of foods, e.g. ready meal card sleeves, cereal boxes, labels from tins of soup, including some vegetarian options.

Year	Unit	Lesson	Activity title	Description	Materials Required
2	Feeding and exercise	4	Testing bird food	Children conduct an investigation into a food chain in a suburban garden. They test different bird foods to see which food birds like best by monitoring feeding stations.	Bird tables or feeders or shallow dishes of food placed on tables; commercial bird seed mix; chopped fruit; meal worms; bread.
3	Movement and Feeding	4	Learning about bones and muscles	Children investigate bones and muscles by passing round a baby-grow filled with beans to imitate a body without a skeleton and think about ways to make the baby-grow stand up. They also make the tallest upright figure that they can using marshmallows, water and cocktail sticks.	A baby-grow filled with split peas, lentils or bean-bag beans; marshmallows; cocktail sticks; warm water.
3	Movement and Feeding	5	Seeking patterns in body dimensions	In groups, children compare hand sizes and find out whether the child with the biggest hand can grab the most sweets. They then carry out a pattern-seeking investigation into the relationship between body part and ability.	Tub of large, wrapped sweets for each group; tape measures.
3	Light and Shadows	2	Investigating how shadows are formed	Children explore shadow formation using lights (e.g. torches) and different objects before making a silhouette gallery.	Overhead projector with a strong lamp / another strong light source; torches; everyday classroom objects; black paper; chalk; scissors.
3	Light and Shadows	3	Sorting materials as transparent, translucent or opaque	In groups, children explore a range of labelled materials with varying degrees of opacity, using torches to test what happens to their shadows.	A range of labelled materials with varying degrees of opacity (e.g. cotton, net, felt, plastic, greaseproof paper, card, bubble wrap); strong light sources; photosensitive paper; small, opaque objects.
3	Light and Shadows	4	Drawing a shadow	Children take digital photographs of the shadows that they can see outside, and of the objects that cast them. They mark shadows of themselves with chalk and then return to investigate them later in the day.	Drawing materials; chalk for drawing around children's shadows; a digital camera.

Year	Unit	Lesson	Activity title	Description	Materials Required
3	Light and Shadows	5	Making shadow puppets	Children make a test shadow puppet of Humpty Dumpty and investigate how the puppets' shadows can be changed.	Card scissors; art straws or lolly sticks; various types of paper (e.g. tissue paper, cellophane, greaseproof paper etc.); a strong light source; a tape measure.
3	Light and Shadows	6	Presenting a shadow-puppet play	In groups, children work on adapting their own choices of nursery rhyme (or other simple story), for presentation as shadow-puppet plays for a Reception class. They create their puppet characters and decide how to narrate the story and move the puppets to animate it.	Card, scissors; art straws or lolly sticks; various types of paper (e.g. tissue paper, cellophane, greaseproof paper etc.); a strong light source.
3	What Plants Need	1	Growing plants	In groups, children explore the school grounds or another specified area, making note of two places where plants are struggling to grow well and two places where they are flourishing.	Clip boards; cameras.
3	What Plants Need	2	Watering plants	Children observe at regular intervals what happens to a pot plant when it is watered.	Pot plant that is wilting (showing signs of dehydration); water; digital cameras.
3	What Plants Need	2	Investigating how much water plants need	Children carry out an investigation to find out how much water a plant needs to stay healthy. They gather data over a week to see how much water a plant needs by giving plants different amounts of water and comparing them against a control plant which is not watered at all.	Green leafy pot plants (one per group and one as a control) planted in pots no bigger than a mug, approximately 8 cm in diameter; measuring cylinders with 10 ml intervals clearly marked; water; stickers to label plants.
3	What Plants Need	3	Investigating how much space plants need to grow	Children carry out an investigation to find out how much grass seed is needed to grow the perfect patch of grass.	Plastic tray, e.g. take away containers; soil; grass seeds; scales; measuring cylinders; measuring spoons; elastic bands.
3	What Plants Need	4	Investigating whether plants	Children carry out an investigation to observe how an onion grows without soil.	Large plastic bottles (one 2 litre bottle per group); onion (one per group); jugs; water; scissors.

Year	Unit	Lesson	Activity title	Description	Materials Required
			need soil to grow		
3	What Plants Need	4	Discovering the right soil for radishes	In groups, children plan and carry out a test to find out which soil is best for growing radishes.	Samples of different planting materials (e.g. compost; sand; orchid compost; clay); small plastic trays/yoghurt pots; measuring cylinders; water; scales; radish seeds.
3	What Plants Need	5	Using fertiliser	In groups, children explore a collection of fertiliser labels to look for similarities and differences in the ingredients. They investigate, using fertiliser pellets, which quantity of fertiliser makes plants grow best.	Collection of fertiliser labels; radish seeds; plastic pots/yoghurt pots; solid fertiliser pellets; compost (with no added minerals); stickers to label pots; measuring cylinder; scales; mature radish plants from Lesson 4.
3	What Plants Need	6	Radish results	Children record the similarities and differences between radishes grown in the same pot. Once all external observations have been made, children slice open the radishes and note any similarities or differences between the plants.	Mature radish plants from Lesson 5; string; tape measures; scales; knives; chopping boards.
3	What Plants Need	6	Making plants grow better	Children grow a mystery plant from seed. As the different plants begin to emerge, children measure and record how much their plant grows every few days and identify plants that grow at the same rate as their own. Using this information, children produce a helpful hints and tips card for their plant.	A jar of mystery seeds (including sunflower seeds, broad beans, peas, runner beans etc.); planting materials; water, measuring equipment, fertiliser pellets; reference materials or IT resources; mature grass seed from Lesson 3.
3	Rocks and Soils	1	Examining rocks	In groups, children sort rock samples into different categories using their own criteria for selection. Once they have sorted the rocks, each group swaps with another and try to guess the sorting criteria that has been used.	Hand lenses or digital microscopes; different rocks plus individual different 'mystery rock'; flip chart paper; coloured pencils and paper for the scrapbook or poster.

Year	Unit	Lesson	Activity title	Description	Materials Required
3	Rocks and Soils	2	Investigating the hardness of rocks	Children devise a test for hardness and conduct this test on a sample of rocks. They physically arrange the rocks from hardest to softest.	Hand lenses; samples of different rocks; samples of white marble; samples of chalk; copper coins; steel nail files; soft dusters.
3	Rocks and Soils	4	Investigating fossils	Children make a 'fake fossil' out of modelling dough and Plaster of Paris.	Pre-prepared fossil cast; plastic containers such as disposable cups; modelling clay; shells, fossils or plastic toys; Plaster of Paris; water; jug.
3	Rocks and Soils	4	Creating a dinosaur	In groups, children assemble a fossil creature from a selection of bone-shaped dog biscuits.	Large sheets of paper; tracing paper; marker pen or chalk; large bags of bone-shaped dog biscuits; large bags of different shapes of dog biscuits; digital cameras.
3	Rocks and Soils	5	Examining soil	Children go out into the school grounds to look at soil around school and collect small samples.	Soil science kit consisting of: small portable tool kit box; small trowel; protective gloves; set of colour cards (could be paint sample cards); hand lenses; petri dishes; small sealable plastic pots; white and black card; labels; wash bottle; digital camera; clipboards; microscope; stones; black paper; transparent jar and lid.
3	Parts of Plants	2	Investigating roots	Children use hand lenses to compare and contrast two different plant roots, then record their observations.	Selection of plants with different sorts of roots, e.g. dandelion (tap root), parsnip or carrots with stems and leaves attached; plants with more fibrous root structures, e.g. bedding plants such as geraniums, pansies, etc; protective gloves; bulb vase; bulb, e.g. onion or hyacinth; hand lenses.
3	Parts of Plants	2	Investigating stems	Children investigate how the stem moves water to different parts of the plant. They use food colouring in water to see how the stem moves the water to different areas of the plant.	White carnations or other white flowers; vases of water; dark food colourings, e.g. red or blue (green and yellow are difficult to see); knife; cutting board; digital cameras.

Year	Unit	Lesson	Activity title	Description	Materials Required
3	Parts of Plants	3	Investigating leaves	Children collect different types of leaves from outside and compare them with other leaves that you may find in a supermarket.	Leaves that you typically find in a greengrocer's shop or supermarket, e.g. salad leaves, cabbages, fresh herbs, cut flowers with leaves attached, etc; wax crayons; tracing paper.
3	Parts of Plants	3	Making a terrarium	In groups, children construct their own terrarium.	2 litre plastic bottles; scissors; sterile garden compost (not garden soil); small plant, e.g. small fern or spider plant; small stones or pebbles; sticky tape.
3	Parts of Plants	4	Dissecting a flower	Children dissect a flower so they can see all the different parts of a flower.	Open flowers, e.g. tulips, star lily, apple blossom, daffodil; plastic knives; cutting boards; laminator sheets; paper.
3	Parts of Plants	5	Modelling seed dispersal	Children make models to show seed dispersal and rehearse a demonstration to perform to the rest of the class.	Sticky tape; card and paper; scissors; balloons; confetti; blue fabric to represent water or blue sports bibs; selection of arts and crafts materials; newspaper or wrapping paper; digital cameras.
3	Magnets and Forces	1	Moving toys	Children explore how different toys move.	A selection of moving toys including: toy cars, pull back and release moving toys, yo-yos, windmills, balls, paper planes/gliders, etc.
3	Magnets and Forces	1	Racing cars	Children carry out an investigation to explore how catapults can be used to move toy cars.	Flipchart paper; elastic bands; rulers; tape measures; toy cars; small chairs; etc.
3	Magnets and Forces	2	Playing French boules	Children play French boules on the playground (on a smooth flat surface) and on the grass or on gravel. They record their results and decide on the best surface for playing French boules.	Large hoops; tennis balls; netballs; tape measures; string; French boules set if available.
3	Magnets and Forces	2	Designing a table top game of bowls	Children design a table top game of bowls using different sized coins and different surfaces. They carry out a series of comparative tests and present their findings to the class.	Tables; target ball (e.g. tennis ball); tape measures; stickers to mark the 60 cm target area; different-sized coins (e.g. 1p, 2p, 10p and 50p coins); materials to make the different sliding

Year	Unit	Lesson	Activity title	Description	Materials Required
					surfaces (e.g. thin card, plastic sheet, cardboard boxes, tinfoil, sand paper, etc.); sticky tape; large sheets of paper.
3	Magnets and Forces	3	Exploring magnets	In groups, children take two bar magnets and place one of them in a plastic dish. Children use the second magnet to move the dish from one end of the bowl to the other. The challenge is to manoeuvre the magnet in such a way that it forces the dish to move without coming into direct contact with it.	A selection of different magnets, e.g. bar magnet, button magnet, magnetic marbles, horseshoe magnet, ring magnet, etc.; plastic dishes that float; large bowls of water.
3	Magnets and Forces	3	Magnetic poles	In pairs, children predict and explore how magnets behave when they are brought together with opposite poles and like poles.	Bar magnets (one per child); white board markers; doughnut magnets; pieces of doweling or wooden cane; digital cameras.
3	Magnets and Forces	4	Identifying magnetic materials	Children sort materials into two groups: materials that they think are attracted to magnets (magnetic) and materials that they think are not attracted to magnets (not magnetic). They then test their predictions.	Selection of magnets; aluminium foil; selection of coins made from different metals (e.g. 1ps, 2ps, 5ps); paperclips; plastic clothes pegs; pencil; rubber; pencil sharpener; paper; nail; drinks can; fabric; digital cameras.
3	Magnets and Forces	4	Making magnetic money	Using a strong magnet, children identify which coins are magnetic and which are not.	Pre-1992 1p and 2p coins; post-1992 1p and 2p coins; string magnets; aluminium foil; tin foil; paperclips.
3	Magnets and Forces	5	Floating paperclip	Children observe a 'floating' paperclip and predict and test what will happen if they place different objects between the magnet and the paperclip.	Clamps; selection of magnets (e.g. bar, horseshoe, button, doughnut, marble, etc); paperclips; fine thread; sticky tack; sheets of card; sheets of paper; tissue paper; fabric; tinfoil; sand paper.
3	Magnets and Forces	5	Exploring the strength of magnets	Children carry out an investigation to identify which magnet from the collection provided is the strongest.	Magnets (bar, horseshoe, button, doughnut, marble); paper clips; sticky tack; thread; sheets of card.
3	Magnets and Forces	6	Making a tool that can reach	In groups, children develop an idea for a tool that can reach something far away	Magnets; card; paper; scissors; sticky tape; glue; sand paper; tin foil; cardboard tubes and other model

Year	Unit	Lesson	Activity title	Description	Materials Required
			something far away	and construct their design using card and other appropriate materials.	building materials you may have available.
4	Electricity	2	Constructing a simple circuit	Children create simple circuits to make a bulb light up and a buzzer buzz.	Bulbs; bulb holders; buzzers; wires; batteries; battery holders; switches.
4	Electricity	3	Completing circuits	In groups, children look at illustrations of different circuits, predict whether the bulb will light and then check their predictions by creating the circuits.	Wires with crocodile clip ends; bulbs; bulb holders; batteries; wires of at least four different colours with stripped ends; modelling clay.
4	Electricity	4	Investigating electrical conductors and insulators	Children test for spoons that insulate and conduct electricity, then make a group record of their results. They collect small objects made from a variety of different materials, predict which will conduct electricity and then test their predictions.	Batteries; bulbs; bulb holders; wires with crocodile clips attached; spoons of different sizes made out of metal, wood and plastic; small objects made from a variety of different materials (e.g. rubber, paperclip, coins).
4	Electricity	5	Investigating which materials conduct electricity	In small groups, children use a sample of materials to answer questions relating to materials and electrical conductivity and insulation.	Sample materials for testing (e.g. tissues; kitchen roll; paper; card; water; fizzy water; syrup; cooking oil; baby oil; bubble bath; hair conditioner; plastic cups; modelling clay); batteries; bulbs; bulb holders; wires; large sheets of paper; sticky notes.
4	Electricity	6	Using switches	Children construct circuits using buzzers and bulbs and insert switches into their own circuits. As a class, they discuss what makes a good switch and then pairs are given a selection of recycled materials to design and test their own switch.	Different types of switches to use in simple circuits; bulbs; bulb holders; buzzers; batteries; wires with crocodile clips; paper clips; split pins; thin card; aluminium foil; wire; wire strippers; spring loaded clothes pegs; cardboard; sponges; insulating tape and other recycled materials if required.
4	Dangers to Living Things	5	Finding out the effects of environmental change	Children observe a patch of ground outside that had been previously covered up. They count and identify invertebrates, noting the differences before and after the ground was covered.	A camera.

Year	Unit	Lesson	Activity title	Description	Materials Required
4	Human Nutrition	2	Digesting a banana sandwich	Children recreate digestion of a banana sandwich by using a variety of materials to illustrate what happens as it goes from our mouths to our stomachs to the intestine.	Plates; knives and forks; potato mashers; bread, bananas, chocolate spread; spoons; large transparent sandwich bags; small bottles containing a mixture of red-coloured syrup and water (labelled saliva); small bottles containing lemon juice or vinegar (coloured green and labelled stomach acid); tights or 'pop socks'; gloves; bowls; scissors.
4	Human Nutrition	3	Modelling teeth	Children create teeth out of modelling clay.	Soft modelling clay in pink and white colours; mirrors; apples; digital cameras.
4	Human Nutrition	4	Investigating tooth decay 1	Children carry out an investigation into the effects of different drinks on teeth. They test their ideas by immersing eggshells in various liquids, identifying variables and recording results over time.	Dry eggshells (boiled to eliminate any residual dirt or bacteria); measuring cylinders; clear plastic tumblers; variety of liquids including water, fizzy sugary drink, lemon juice or vinegar, milk, pure fruit juice, etc.; digital camera; sticky notes; universal indicator papers.
4	Human Nutrition	5	Investigating tooth decay 2	Following on from the investigation from lesson 4, children compare the eggshells with new clean and dry eggshells.	Dry eggshells (boiled to eliminate any residual dirt or bacteria); measuring cylinders; clear plastic tumblers; variety of liquids including water, fizzy sugary drink, lemon juice or vinegar, milk, pure fruit juice, etc.; digital camera; universal indicator papers; hand lenses; digital microscope.
4	Human Nutrition	6	Investigating toothpaste	Children compare three different toothpastes through a variety of tests.	Ceramic tiles with squares of black permanent marker pen filled in for children to try and remove; white ceramic tiles; black permanent marker pen; selection of toothpastes; toothbrushes (all of the same bristle hardness); stopwatches; plastic bowl.

Year	Unit	Lesson	Activity title	Description	Materials Required
4	Sound	1	Making sounds	In groups, children visit 'sound stations' where they make sounds and watch objects vibrating.	Range of common musical instruments from various cultures (drums, rainmakers, xylophones and stringed instruments); different sized elastic bands stretched over different sized cups or yoghurt pots; tuning forks; trays of water; ping pong ball suspended on string from a retort stand; balloons containing small quantities of different types of content (cake decoration sprinkles, dried peas, water, marbles or paper clips); bottles filled to varying heights with coloured water.
4	Sound	2	Modelling how we hear	In pairs, children are given a tuning fork and a piece of plain paper. They strike the fork and pass the edge of the paper between the tines of the fork when it is vibrating.	Tuning forks; A4 plain paper.
4	Sound	2	Investigating how sound travels	Children investigate how sound can be heard through different substances.	Flip chart and marker pen; data logger; tank of water; tank of dried lentils or sand; fabric; sound box or waterproof buzzer.
4	Sound	3	Changing pitch	Children explore ways of changing sounds through a variety of instruments by changing the pitch of a sound on drums and stringed instruments.	Guitar; tuneable drums; stringed instruments or models of strings (strings wound around nails at either ends of lengths of wood); plastic food containers without lids; selection of elastic bands (long, short, thick and thin).
4	Sound	4	Making a 'shrieking balloon'	Children make a 'shrieking balloon' and link frequency of vibration to pitch.	Metal nuts; balloons.

Year	Unit	Lesson	Activity title	Description	Materials Required
4	Sound	4	Making a wind instrument	Children make straw oboes and experiment with changing the pitch by changing the length of the tube.	Plastic drinking straws; scissors; combs; tracing paper; several plastic bottles of the same size; water; food colouring.
4	Sound	5	Measuring the volume of sounds	Children use data loggers to measure the volume of their voices and a variety of instruments.	Data loggers; variety of musical instruments.
4	Sound	5	Making a sound map of the school	Children use data loggers to make a sound map by recording sounds in different areas of the school.	Printed maps of the school showing interior areas as well as outdoors; data loggers.
4	Sound	6	Measuring how far away sounds can be heard	Children conduct an experiment to measure how far away sounds can be heard.	Objects which can generate a sustained and replicable sound, e.g. buzzer; trundle wheel or long measuring tape.
4	Sound	6	Making a sound track	Children create sound effects for a short Foley film.	Selection of objects which will help children create sound effects for the film; iPads or access to IT resources.
4	Grouping Living Things	4	Identifying living things in your local area	Children make yoghurt pot pit traps and place them in four places outside where they think small invertebrates may be. They explore the four places, classifying the living things in these areas.	Identification guides; white (or light coloured) plastic dishes or trays; five large envelopes with location names on; sticky notes; pencils; large plain sheet (pale colour if possible); stick or pole; digital cameras; other equipment that might help to identify, e.g. magnifying glasses, pooters (devices for catching small insects), etc.
4	Changes of State	1	Introducing gases	Children predict and observe what happens when sultanas are put into lemonade.	Lemonade; transparent plastic cups; flip chart paper; hand lenses; raisins or sultanas; party balloons; pin.
4	Changes of State	2	Making chocolate crispy cakes	Children use their knowledge of changing states of materials to make chocolate crispy cakes.	Cooking area including electric or gas hobs; pans; glass bowls; chocolate; puffed rice cereal or similar; spoons; cake cases.
4	Changes of State	3	Melting and freezing water	Children discuss the best methods for melting and carry out activities involving measuring and reading temperature.	Pre-prepared blocks of ice containing fortune statements; thermometers or data loggers with temperature sensor

Year	Unit	Lesson	Activity title	Description	Materials Required
					attachments; kettle; beakers or ceramic cups; access to a fridge and a freezer; digital camera.
4	Changes of State	4	Melting and freezing materials	Children investigate melting and freezing by observing frozen substances and watching how they behave as they return to room temperature.	Selection of materials for teacher to freeze prior to the lesson, e.g. cola drink, cooking oil, fresh cracked eggs, baked beans, shaving foam, bubble bath, etc. (these should include samples of the materials that the children will test for comparative purposes); selection of materials for children to test, e.g. butter, candle wax, different types of chocolate (milk, plain, white), cheese, coconut oil, ice cream, ice, jelly, marshmallows, set honey, etc.; take away coffee cups with plastic lids; sand trays; tea light holders; tea lights; small aluminium trays; matches; tongs; thermometers or data loggers with temperature sensors.
4	Changes of State	5	Investigating evaporation	Children predict and investigate what will happen to a wet towel when it is hung on a washing line.	Tea towels; bowl of hot water; washing line; pegs; paper towels; pipettes.
4	Changes of State	6	Making a water cycle	Children make a model of part of the water cycle using a 2 litre plastic drinks bottle and ice.	Flip chart paper; 2 litre plastic drinks bottles; scissors; food colouring; ice cubes; plastic sandwich bags; marker pens; masking tape.
5	Life Cycles	1	Growing and measuring plants and/or animals in the classroom	Children observe the life cycle of broad bean seeds in 'real time' in the classroom. If possible, children could observe the life cycles of animals in the classroom (e.g. hatching frogspawn, hatching chicks etc.). They make observations on their living thing over the duration of the unit.	Plant seeds (e.g. broad bean seeds); magnifying lenses; digital cameras or video recorders; clear plastic sandwich bags; a stapler; kitchen paper; masking tape; labels; acetates with cm ² gridlines (optional); embryonic animals of your choice and suitable environments (optional).

Year	Unit	Lesson	Activity title	Description	Materials Required
5	Life Cycles	5	Recording life cycles in the school environment	In groups, children try to find examples of different stages of plant or animal life cycles in their local environment, and record them using digital cameras.	Digital cameras; library/IT resources; IT equipment for using digital photographs and creating life cycle diagrams; printers.
5	Life Cycles	6	Visiting a botanic garden	Children go on an offsite visit to a botanic garden, note down the plants and/or animals that they see and in groups choose one example of a plant or animal to investigate.	Digital cameras; notebooks; pencils.
5	Earth and Space	3	Modelling how Earth's rotation causes day and night	In a large area, children model how Earth's rotation explains day and night.	Torch; globe.
5	Earth and Space	4	Investigating shadow sticks	In groups, children plan and complete an investigation into how shadows change over the course of a day.	Sticks used to cast a shadow (e.g. PE marker poles); measuring tapes; chalk to mark positions of shadows; clock (to record time).
5	Earth and Space	5	Investigating the phases of the Moon	Children practise modelling the phases of the Moon in the classroom. One child is placed in the position of the Sun and the rest around them, representing Earth at its various orbit positions. A bi-coloured ball (the Moon) is then moved around the inside of the circle so children can discuss the shape seen on the ball.	Large sponge ball on a stick, painted half black and half white; ping pong balls, painted half white and half black, mounted on sticks; tennis balls.
5	Separating Mixtures	1	Investigating sieving	Children explore separating mixtures of dry ingredients with sieves.	Graduated sieves; colander; jar containing flour, rice and dried peas; a snack bag containing popcorn and sherbet; a snack bag containing raisins and popping candy; a snack bag containing blueberries and icing sugar (you will need one of each bag per group and you might want to label the bags with the appropriate name); labels; additional empty snack bags.

Year	Unit	Lesson	Activity title	Description	Materials Required
5	Separating Mixtures	2	Investigating dissolving	Children investigate dissolving candy floss and a variety of other solids in water, some of which dissolve in water and some which do not.	Bags or tubs of candy floss; lolly sticks; transparent plastic cups; straws; kitchen roll; solids for the dissolving solids investigation (e.g. brown sugar, instant coffee, salt, cocoa powder, gravy granules, couscous, tea leaves, mixed dried herbs, mixed spices, corn flour); plastic tea spoons; baby oil; colourless bubble bath; droppers; small jars with lids; labels; plates; digital cameras.
5	Separating Mixtures	3	Learning more about dissolving	Children decide on questions about dissolving to investigate using a fair method. They plan a fair test and carry out their investigation.	Flip chart paper; water at different temperatures; transparent plastic cups; solids that dissolve (e.g. white sugar, soft brown sugar, dark brown sugar, instant coffee, salt, cocoa powder, drinking chocolate, gravy granules); plastic teaspoons; thermometers and/or data loggers; scales; measuring cylinders; timers.
5	Separating Mixtures	4	Investigating evaporation	Children predict and test which solids that have dissolved can be recovered by evaporating the liquid from the solution, and explain how they know this.	Water; coloured paper towels; candy floss solutions from Lesson 2; small jars full of solutions, suspensions and mixtures from Lesson 2 (e.g. brown sugar, icing sugar, instant coffee, salt, cocoa powder, tea leaves, mixed dried herbs or spices, etc.); saucers; plastic teaspoons; measuring cylinders or syringes; oasis (from local florists); digital cameras.
5	Separating Mixtures	5	Investigating filtering	In groups, children filter cups of dirty water using funnels and plastic cups. They revise their filtering system accordingly.	Large plastic bottle filled with 'dirty' water (made from adding sand, soil and small gravel to water); small jars full of mixtures from Lesson 2 (e.g. baby oil and tea leaves, flour, rice flour, corn

Year	Unit	Lesson	Activity title	Description	Materials Required
					flour, mixed dried herbs, mixed spices); funnels; materials that could be used for filtering, such as filter paper, paper towels, kitchen roll, muslin, gauze bandage, toilet paper, tissues; plastic cups; icing sugar.
5	Types of Change	1	Investigating solubility	In groups, children predict how many drops of water it will take to dissolve granulated sweetener, icing sugar and caster sugar. They test their predictions and record their results.	A4 plain paper; stapler; scissors; plastic shot glasses; granulated sweetener; icing sugar; caster sugar; water; droppers.
5	Types of Change	2	Separating mixtures	Children repeat their solubility investigation with cinnamon rather than sugar and observe the differences. They then receive a mixture of sugar, cinnamon and dried fruit and separate it, recording what they have learned.	Evaporated solutions from Lesson 1; dropper; water; ground cinnamon; plastic shot glasses; dried fruit; caster sugar; sieves; filter papers; funnels; beakers (or conical flasks); lentils; small paperclips; magnets.
5	Types of Change	3	Melting materials	Children organise a selection of different materials into two groups: those they think will melt on top of a cup of hot water and those they think won't. They then test their predictions and record the results.	Ice; saucers; wax; coffee cups with lids or cups and saucers (where the saucer can be placed on top of the cup); hot water; butter; lard; white chocolate; dark chocolate; wood; metal; plastic; stone; cotton wool; jelly sweets; plastic shot glasses.
5	Types of Change	4	Burning and heating	Children make biscuit mix and test what happens when they put it in the oven, making observations every five minutes, as an example of irreversible change.	Bowls; wooden spoons; plastic biscuit cutters; baking tray; greaseproof paper; plain flour; baking powder; cinnamon; margarine; caster sugar; eggs.
5	Types of Change	5	Testing the effects of different acids	In groups, children observe the effects of mixing vinegar and bicarbonate of soda. They then choose a question that can be answered with a fair test and plan and carry out their investigation.	Bicarbonate of soda; saucer; dropper; stop watch; measuring cylinder; tape measure; thermometer; transparent beakers; paper towels; tray; dried fruit; hot and cold water and a selection of acids, including vinegar, lemon juice,

Year	Unit	Lesson	Activity title	Description	Materials Required
					lime juice, apple juice; honeycomb, sweet or cinder toffee.
5	Types of Change	6	Creating a meal	Using given ingredients, mixtures and heat, children create a meal where the ingredients irreversibly and/or reversibly change.	Food stuff you would like children to use in the challenge. These could include chocolate of different types, carob, butter, flour, baking powder, bicarbonate of soda, margarine, mixed dried fruit, seeds, oats, flour, sugar, icing sugar, popping candy, popcorn, drinking chocolate, eggs.
5	Materials	1	Exploring properties of materials	Children classify materials according to different properties and identify objects made from them.	Flip chart paper; sticky notes; magnets; torches; droppers; cups of water; different types of wood, metal, plastics, fabrics, papers, brick, ceramics and rocks.
5	Materials	2	Testing electrical conductivity	Children take an electric plug apart and look at the different materials inside, thinking about conductivity and insulation.	Electric plugs; screwdrivers.
5	Materials	3	Testing thermal insulation	Children plan and carry out investigations to discover which materials are good thermal insulators.	Thermometers (data loggers); timers; tape measures; five different materials, e.g. aluminium foil, bubble wrap, kitchen roll, fleece, towelling; beakers or small bottles filled with hot water; sticky tape; PE bands or bibs; metal and plastic spoons (one per group); five ice lollies.
5	Materials	5	Investigating properties of materials	Children plan, carry out and interpret an investigation in trying to answer a question about the most suitable material for a given function.	Sticky notes; appropriate measuring equipment, e.g. tape measures, stop watches, measuring cylinders, force meters, scales, thermometers, etc.; various samples dependent on questions being investigated but possibly including samples of hard woods, soft woods, different metals,

Year	Unit	Lesson	Activity title	Description	Materials Required
					different plastics, glass, concrete, slate, brick, wool, cotton, different rocks, cement, rubber, polystyrene, sponge, different papers and cards, different fabrics, etc.
5	Forces	1	Exploring gravitational pull	Children build a model to demonstrate the effects of gravity.	Cardboard tubes; elastic bands (similar lengths but different thicknesses); split pins; paperclips; paper; scissors.
5	Forces	2	Investigating shoe soles	Groups of children explore different force meters and compare the soles of different shoes to find out which is the most 'slippy' or 'grippy'.	Flipchart paper; force meters; selection of shoes with different soles (children can use their own shoes if they wish); heavy weights or something heavy for its size, e.g. small tin of beans, large potato, battery; different floor surfaces, e.g. wood, laminate, carpet, tarmac, grass, etc.
5	Forces	3	Exploring air resistance	Children identify the effect of air resistance on falling paper.	Paper.
5	Forces	3	Making paper spinners that use air resistance	In groups, children identify the effect of air resistance on a selection of objects. They also make a paper spinner and explore how the spinner behaves when dropped from a height.	Selection of objects that use air resistance to slow the effects of gravity, e.g. paper plane, sycamore seeds, feathers, shuttlecock, etc.; paper; scissors; timers; paper clips.
5	Forces	4	Powered by air resistance	Children create a model boat, then plan and carry out an investigation to find the best sail for it.	2 m piece of square-based guttering per group; clip-on guttering end caps (attach these to each end of the gutter to create a sealed water trough); swimming float noodles or pipe insulation (cut in half to create semi-circular hulls); plastic straws; lollipop sticks (for the masts); paper (for the sails); scissors; general craft materials, e.g. string, drawing pins, sticky tack, sticky tape, etc.; desk or handheld fans to produce artificial wind.

Year	Unit	Lesson	Activity title	Description	Materials Required
5	Forces	5	Investigating boats	In groups, children carry out an investigation to find out which is the best shaped hull for reducing water resistance.	Children's boats from Lesson 4; water troughs; swimming float noodles or pipe insulation; wooden clothes pegs; yoghurt pots; empty cotton reels; dowel to thread through the centre of the cotton reels; weights (e.g. 1ps, 2ps, marbles, paperclips, etc); scissors; digital scales.
5	Forces	6	Simple mechanisms	Children investigate levers by opening tins with long and short screwdrivers.	Metal tins; short and long screwdrivers; flipchart paper; examples of simple mechanisms; construction kits or building materials.
5	Forces	6	Investigating levers	In groups, children make a model seesaw and measure the force needed to lift different masses.	30 cm wooden rulers or pieces of wood; triangular prism shaped objects to make the fulcrums; slotted masses; push meters; sticky notes.
6	Light and Sight	2	Recording the paths of light beams	In a darkened room, children investigate how light travels and record their conclusions.	Laser light (from a DIY shop); chalk dust or talcum powder; a strong torch; torches; plastic hair combs; a pen; card.
6	Light and Sight	3	Investigating how we see	Children investigate what would need to happen to see an object at the bottom of a black tube. They explore different effects of placing holes in different areas of the tubes and shining a torch through the holes before discussing how light travels.	Black paper (or card); sticky tape; scissors; hole punches; a collection of small objects (e.g. coins, paper clips, marbles, pencil sharpeners); large towels or blankets; torches.
6	Light and Sight	4	Exploring reflections	Children investigate bouncing a tennis ball off an even wall to model how light can be reflected and contrast the action on an uneven surface.	A tennis ball; sheets of metal foil (A5 size is large enough).
6	Light and Sight	4	Making a periscope	Children make and investigate periscopes.	Scissors; sticky tape; plastic mirrors; pencils; card.
6	Light and Sight	5	Investigating which fabric	Children carry out an investigation into which fabric reflects most light.	A selection of cut and labelled fabrics (include highly reflective, 'shiny' and

Year	Unit	Lesson	Activity title	Description	Materials Required
			reflects most light (part 2)		matt fabrics, and light and dark colours, and label fabrics with believable names suitable for prototype fabrics, e.g. neolyte, novoflect etc.); rulers; data loggers; light sources; video recorders, graph-drawing software (optional).
6	Our Bodies	1	Exploring the heart	Children investigate the function of the heart by finding their pulse and seeing how many times their heart beats in a minute.	Stopwatch; sticky notes.
6	Classifying Living Things	2	Growing micro-organisms	Children set up an investigation to observe how mould grows on bread in different conditions.	Bread; sealable bags; thermometers; rulers; digital cameras.
6	Classifying Living Things	3	Exploring micro-organisms further	Children use evidence from their previous investigation to accelerate compost decay.	Compost sealed in plastic bag; organic waste mix of greens and browns; 2 litre plastic bottles; gauze; elastic bands.
6	Classifying Living Things	4	Classifying the plant kingdom	Children collect leaves from outside and record their characteristics for their identification key.	Leaves (e.g. holly, oak, sycamore, beech, ivy, birch); leaf collection trays; sticky tack, large sheets of paper; sticky notes; pens; flip chart.
6	Classifying Living Things	5	Classifying buttercups	Children explore and identify the physical characteristics of locally grown buttercups.	Buttercups growing in the school grounds; hand lenses; IT resources or reference materials showing different species of buttercup.
6	Classifying Living Things	6	Hunting for worms	Children find, explore and classify earthworms living in their local environment.	Mustard water (1 tablespoon of mustard per 1 litre of water); watering cans; large hoops; hand lenses; paper towels; small collection bowls; plastic gloves.
6	Changing Circuits	2	Investigating bulb brightness	Children are given a selection of batteries with different voltages and investigate the relationship between batteries and bulb brightness.	Batteries (cells) of different voltages (1.5V, 3V, 4.5V, 6V); battery holders; wires; crocodile clips; bulbs compatible with battery voltage; bulb holders; a switch.

Year	Unit	Lesson	Activity title	Description	Materials Required
6	Changing Circuits	3	Investigating turning the volume down on a buzzer	In groups, children predict how bright a bulb would be in different circuits. They test their predictions and then replace the bulb with a buzzer to see how volume is affected.	Batteries (cells) of different voltage; wires; crocodile clips; bulbs compatible with different battery voltages; bulb holders; buzzers; switch; A3 paper.
6	Changing Circuits	4	Investigating the effect of wires on bulb brightness	Children plan and conducted an investigation comparing different properties of wires and the affect they have on the brightness of bulbs.	Battery (cells); bulbs; different types of wire including wire made from different materials, fuse wires and wires of different thickness; bulbs compatible with the battery (cell) voltages; data loggers if available; boxes to block out classroom light so brightness can be measured; sticky notes; white paper or card.
6	Changing Circuits	5	Testing our knowledge	In groups, children make a circuit to turn a buzzer on and off. They then make a break in the circuit, attaching an extra wire and test different suggestions of what can be used to turn the buzzer on.	Batteries (cell); wires; wire cutters/strippers; crocodile clips; buzzers; switches; card; paper clips, sticky tape.
6	Changing Circuits	6	Repairing a faulty scoreboard	Children review circuit diagram symbols and build a circuit to make a motor turn.	Battery (cells); wires; crocodile clips; motor; sticky notes.
6	Evolution and Inheritance	4	Looking at Darwin's finches	Children demonstrate beak adaptation with wooden spoons and a tall glass beaker full of dried beans.	Four wooden spoons; two tall glass beakers or hi-ball glasses; dried broad bean seeds; two shallow dishes; dried lentils; access to IT sources or reference materials for research.