Science Year 3

Knowledge and Skills:	Test Question, Apparatus, Prediction, Method, Fair Test, Results, Conclusion. **Scientific Enquiry**	Examples
Know and recall accurately key facts relevant to the science topics below.	Children should be able to (by end of year 4):	Ideas for prompting scientific enquiry:
Plants Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers Introduce the relationship between structure and function (each part has a job to do – roots and stem = nutrition between structure and a support, leaves = nutrition, flower = reproduction. Note: Pupils may learn that plants make their own food through photosynthesis but they do not need to understand how.) • 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. • Investigate the way in which water is transported within plants. • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	☐ Ask relevant questions and use different types of scientific enquiries to answer them, e.g. Do plants need light? Do plants grow better with fertiliser? ☐ Set up simple practical enquiries, comparative and fair tests. ☐ Make predictions, suggest improvements and raise further questions. ☐ Report findings by presenting results and drawing conclusions. ☐ Use scientific evidence to support findings. ☐ Record findings in; bar charts, tables, keys, graphs, drawings, labelled diagrams. Investigation: Grow 2 plants from a seed. In 4 groups, children investigate what happens when one of the variables is taken away, e.g. light deprivation, water deprivation, plant food or not, heat deprivation. Children share results from other investigations. Investigation: immerse a flower (gladioli or carnation) or celery stick with leaves in water + food colouring. Observe after 2-3 days to show coloration on leaves and petals + dissect stem to show coloration inside plan	Dissect a flower; identify male and female parts. Produce an anatomical diagram showing all flower parts. Observe trees in the local environment at different times of the year. Seasonal walks: identify and name local flora. Compare woodlands to own garden/three Haggs wood Link to art: sketching, annotated sketches/watercolours. Observe a cactus, compared with a basil plant to demonstrate differing watering requirements. Link to how humans and animals adapt to different environments. Cut open and observe seeds in a variety of fruits: oranges, lemons, kiwis, strawberry, raspberries, pomegranate… Looking for patterns. Collect and observe dandelions; clips of fields of dandelion seeds being dispersed. Observe insect activity around blossoms and flowers in spring/summer. Collect, identify and categorise seeds dispersed by plants in autumn. ICT link: grow flowers from seeds, photograph every day and create a time lapse video clip.

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Animals including Humans • 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. • Identify that humans and some other animals have skeletons and muscles for support, protection and movement. Children should be introduced to the main body parts associated with the skeleton and muscles, finding out how different parts of the body have special functions.	☐ Gather, record and classify and present data. e.g. grouping animals with or without skeletons. ☐ Identify differences, similarities or changes related to scientific ideas and processes, e.g. comparing and contrasting the diets of different animals and decide ways of grouping them according to what they eat. ☐ Make predictions, suggest improvements and raise further questions. Investigation: Crime scene? Children observe and analyse a variety of animal skulls Children make predictions /observations regarding shape, size of skull, clues as to what type of diet the animal had (eye sockets frontal facing: carnivore; eye sockets on side of head: herbivore; types of teeth). ☐ Make systematic observations and take accurate measurements. ☐ Gather, record and classify and present data. ☐ Make predictions, suggest improvements and raise further questions. Investigation: Which is the longest bone in the human body? Measure partner's humerus, radius, femur and tibia and plot results on a graph	Gathering natural resources, e.g. stones, sticks, leaves etc to construct a human skeleton from a labelled diagram. Trip to StockBridge Technology Centre to studyhealthy nutrition Link to movementsof athletes in PE specialist sessions. Variety of food tastings corresponding to food groups. Toilet roll muscles to simulate muscle pairs (flexor and extensor, specific muscles e.g. bicep and tricep). Youtube DIY Model of the Arm Craft. Use of model skeleton, skeleton packs and x-ray packs (human and animal): children observe, compare and contrast.

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Rock Detectives • Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. • Explore different kinds of rocks and soil including those in the local environment. • Describe in simple terms how fossils are formed when things that have lived are trapped within rock. • Recognise that soils are made from rocks and organic matter.	☐ Ask relevant questions and use different types of scientific enquiries to answer them. ☐ Set up simple practical enquiries, comparative and fair tests. ☐ Make systematic observations and take accurate measurements. ☐ Gather, record and classify and present data. ☐ Make predictions, suggest improvements and raise further questions. ☐ Report findings by presenting results and drawing conclusions. ☐ Use scientific evidence to support findings. Investigation: which rock would be most suitable for an outdoor statue? Test permeability and hardness e.g. scratch tests. ☐ Gather, record and classify and present data. ☐ Identify differences, similarities or changes related to scientific ideas and processes. Sort a variety of rocks into three main classifications: metamorphic, sedimentary and igneous and produce a labelled diagram e.g. labelling grains , crystals, how formed. ☐ Make systematic observations and take accurate	Examine range of rocks/local and otherwise to examine thei features. Sensory observation of a variety of different rock samples. Chalk drawings (hardness of rocks). Grand Designs project: determine suitability of different rocks for different purposes. Look at cliff erosion, e.g. East Yorkshire. Trip to Robin Hoods Bay – erosion/fossils School-wide observation to identify uses of rocks, e.g. slate, concrete, brick, rocks, chalk… + Visit to St. Helen's Church to compare and contrast. Fossil rubbings. Pupils could research the different kinds of living things whose fossils are found in sedimentary rock. Compare three different types of soil and their properties using magnifying glasses, e.g. clay, sand, compost.

	measurements. Weigh a selection of rocks in grams and kilograms and record results.	Label micro-organisms, organic matter, particles, sand, silt, leaf litter.

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Light • Recognise that they need light in order to see things and that dark is the absence of light. • Notice that light is reflected from surfaces e.g. mirrors. • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. • Recognise that shadows are formed when the light from a light source is blocked by a solid object. • Find patterns in the way that the size of shadows change.	☐ Ask relevant questions and use different types of scientific enquiries to answer them. ☐ Set up simple practical enquiries, comparative and fair tests. ☐ Use scientific evidence to support findings. ☐ Record findings in; bar charts, tables, keys, graphs, drawings, labelled diagrams. Observation : Light travels in a straight line: e.g. board rubber/chalk dust; wrapping paper tube with/without bend; card with three holes lined up/not lined up. ☐ Make predictions, suggest improvements and raise further questions. ☐ Set up simple practical enquiries, comparative and fair tests. ☐ Report findings by presenting results and drawing conclusions. Investigation: which material would be most useful in a jacket design to keep children safe in the dark? (could use 'Dark Den' from Nursery to test) ☐ Make systematic observations and take accurate measurements. Investigation: measure length of shadows in cm and m at different points in the day. ☐ Record findings in graph/chart.	Observe a variety of different materials and sort/classify into light sources/not light sources. Address misconceptions, e.g. moon not a source of light etc. Mirror writing/drawings; multiple mirror reflection pictures; stain-glass window art. Shadow puppets. Art mannequins + torches in darkened room to observe shadow lengths. Museum of Science and Industry visit with Light workshop. Create light and shade on a sketch; use of spotlight to change casting of the shadow (prompting of questioning). Design a pair of sunglasses to protect eyes. Provide a variety of materials transparent, opaque, translucent.

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Forces and Magnets • Compare how things move on different surfaces. • Notice that most forces need contact between two objects, but magnetic forces can act at a distance (without direct contact), unlike most forces which need a direct contact, e.g. opening a door, pushing a swing. • Observe how magnets attract or repel each other and attract some materials and not others. • 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 (not all metals are magnetic). • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing.	☐ Make systematic observations and take accurate measurements: children to measure a variety of objects using a Newton meter/ Force meter. ☐ Make predictions, suggest improvements and raise further questions. Set up simple practical enquiries, comparative and fair tests. ☐ Make systematic observations and take accurate measurements. ☐ Gather, record and classify and present data. ☐ Report findings by presenting results and drawing conclusions. ☐ Use scientific evidence to support findings. Investigation: compare force required to move an object (toy car, shoe…) same distance across a variety of different surfaces e.g. carpet, concrete, sandpaper. ☐ Gather, record and classify and present data. Sort a variety of materials into magnetic/non-magnetic. Record findings. ☐ Use scientific evidence to support findings. ☐ Set up simple practical enquiries, comparative and fair tests. ☐ Report findings by presenting results and drawing conclusions. Investigation: Use a cm/mm scale to determine the maximum distance from which a magnet can attract. Investigation :Predict and test whether 2 magnets will attract/ repel.	Use a variety of magnets, e.g. bar, button, ring, horseshoe. Investigate everyday uses of magnets: magnetic clasps on cupboard doors; toy trains; recycling centres (view clip); compass; magnetic tin opener; vending machines to separate coins (view clip); watch strap; magnetic strip on bank card. Observe use of magnets for magicians tricks or on a film set e.g. in Matilda the chalk writing on the board was created with magnets from the back. Visit a local playground: determine whether they are using push or pull forces on each activity. Make a simple magnetic shape or game to gift to Reception children. Play magnetic fishing rod game. Construct a shape or building using 'Magnetix'.