Year 5 Science coverage

	Discover		Explore		Belong
	Electricity (yr6 objective)	Forces	Animals Inc Humans	Living things and Habitats	Properties and Changes of Materials
Knowledge	• associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit • compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches • use recognised symbols when representing a simple circuit in a diagram **KEY AREAS:** ➢ **Compare and give reasons for why components work and do not work in a circuit.** ➢ **Draw circuit diagrams using correct symbols.** ➢ **Know how the number and voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer.** **Prior knowledge: children should be able to identify common appliances that run on electricity.** **Construct a simple series electrical circuit, identifying and naming its basic parts.** **Identify complete and incomplete circuits.** **Recognise that a switch opens and closes a circuit.**	• explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • identify the effects of air resistance, water resistance and friction, that act between moving surfaces • recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect **KEY AREAS:** ➢ **Know what gravity is and its impact on our lives.** ➢ **Identify and know the effect of air and water resistance.** ➢ **Identify and know the effect of friction.** ➢ **Explain how levers, pulleys and gears allow a smaller force to have a greater effect.** **Prior knowledge: children should know how things move on different surfaces.**	• describe the changes as humans develop to old age **KEY AREAS:** ➢ **Create a timeline to indicate stages of growth in humans.** **Prior knowledge: children should know the simple functions of the basic parts of the digestive system in humans.** **Identify the different types of teeth in humans and their simple functions.**	• describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • describe the life process of reproduction in some plants and animals. **KEY AREAS:** ➢ **Know the life cycle of different living things e.g. mammal, amphibian, insect and bird.** ➢ **Know the differences between different life cycles.** ➢ **Know the process of reproduction in plants.** ➢ **Know the process of reproduction in animals.** **Prior knowledge: children should be able to recognise that living things can be grouped in a variety of ways.** **Can use classification keys to help group, identify and name a variety of living things in their local and wider environment.**	• compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets • know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • demonstrate that dissolving, mixing and changes of state are reversible changes • explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda • reversible, including changes associated with burning and the action of acid on bicarbonate of soda.

	Recognise some common conductors and insulators.	**Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance.** **Know how magnets attract or repel each other and attract some materials and not others.** **Compare and group together a variety of everyday materials.** **Know magnets as having 2 poles.**	**Construct and interpret a variety of food chains, identifying producers, predators and prey.**	**Recognise that environments can change and that this can sometimes pose dangers to living things**	**KEY AREAS:** ➢ **Compare and group materials based on their properties (e.g. hardness, solubility, transparency, conductivity, [electrical & thermal], and response to magnets.** ➢ **Know and explain how a material dissolves to form a solution.** ➢ **Know and show how to recover a substance from a solution.** ➢ **Know and demonstrate how some materials can be separated (e.g. through filtering, sieving and evaporating).** ➢ **Know and demonstrate that some changes are reversible and some are not.** ➢ **Know how some changes result in the formation of a new material and that this is usually irreversible.** **Prior knowledge: children should be able 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.** **Know the shapes of solid objects made from some**

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					materials can be changed by squashing, bending, twisting and stretching.
Key Vocabulary	*Battery, circuit, component, bulb, electricity, device, buzzer, volume, current, matched, motor, wires, break, switch, complete, brightness, electrical conductor, electrical insulator, metal, non-metal, plastic, voltage, plug, volts, symbols, series circuit, safety, components, uses, control,* *NB: Recap and revisit vocabulary from classification in year 4* *irreversible, burning, acid, rusting, chemical reactions, polymers,*	*Apply, direction, forces, levers, lift, machines, move, movement, pivot, pull, pulleys, push, work, gravity, air resistance, upthrust, water resistances, friction, motion, stationary, weight, direction, newton, forcemeter, surface*	*Growth, development, puberty, gestation, infancy/infant, youth, teenager, stage, change, develop, elderly, age, death, hormones,* *NB: The level of vocabulary in this area may need to be agreed individually within schools*	*Life-cycle, mammal, amphibian, insect, bird, life processes, reproduction, life cycle, plants, animals, species, process, function, stages, growth, reproduction, reproduce, germinate, germination, pollinate, pollination, fertilise, fertilisation* *Dispersal, disperse, flower, fruit, seed, stamen, style, stigma, sepal, petal, ovary, pollen, sexual/asexual reproduction,*	*Properties, hardness, soluble, transparent, flexible, durable, conductive (electrical/thermal) magnetic, dissolvable, solution, evaporation, apparatus, equipment, undissolved, separate, powder, solids, liquids, gases, reversible; melting, evaporating, dissolving, sieving, filtering* *irreversible, burning, acid, rusting, chemical reactions, polymers,*
Linked Scientist	James West	Isaac Newton	Jane Goodall	Dr Wangari Maathai	Ahn Byung Min
Thinking Scientifically	• systematically identifying the effect of changing one component at a time in a circuit • designing and making a set of traffic lights, a burglar alarm or some other useful circuit.	• exploring falling paper cones or cupcake cases • designing and making a variety of parachutes • Carrying out fair tests to determine which designs are the most effective. • Exploring water resistance by making and testing boats of different shapes. • Design and make artefacts that use simple levers, pulleys, gears and/or springs and explore their effects.	• Researching the gestation period of other animals and comparing them with humans. • Finding out and recording the length and mass of a baby as it grows.	• Observing and comparing the life cycles of plants and animals in the local environment with other plants and animals around the world. • ask pertinent questions and suggest reasons for similarities and differences • Grow new plants from different parts of the parent plant. • Observe changes in an animal over a period of	• carry out tests to answer questions such as 'which materials would be the most effective for making a warm jacket / wrapping ice cream to stop it melting or making blackout curtains. • Compare materials in order to make a switch in a circuit. • Observe and compare the changes that take place when burning different materials or baking bread/cakes.

				time e.g. hatching and rearing chicks • Comparing how different animals reproduce and grow.	• Researching and discussing how chemical changes have an impact on our lives. • Discuss (research) the creative use of new materials such as polymers, super-sticky and super-thin materials.

Year Group 5	Suggested Assessment Activity(ies)
Electricity • associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit • compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches • use recognised symbols when representing a simple circuit in a diagram	Design circuit for a buzzer/light related to game show operating given different materials/apparatus Create 'circuit map' Use circuits to create games-with lights/buzzers Explain how different Volts of batteries/nos of batteries effects brightness of lights Circuit parts and cards-create diagram and draw Design expt for loudness of buzzer
Forces and Magnets • explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • identify the effects of air resistance, water resistance and friction, that act between moving surfaces • recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect	Parachutes/sails-which will work better-link to surface area Gyrocopters/Flying dinosaurs suggesting changes to variables, observing/measuring changes in flight linked to gravity, surface area and air resistance in explanation of findings Design set of trainers that are lightweight (low mass), grip (friction) etc-apply benefits of forces 4 corners with forces-(each a force) make statements about force and chn go to corner the force relates to
Living things and their habitats • describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • describe the life process of reproduction in some plants and animals **Animals inc Humans** • describe the changes as humans develop to old age	Matching activity-matching different features of life cycles with different animals Odd one out pictures-linked to particular animals and their life cycles Pose enquiry questions e.g what happens when we age
Properties and changes of materials Pupils should be taught to: • compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets • know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.	Group materials into hoops (venn diagram) based on different criteria-chn justify & explain choices Dissolving different materials in water-'mystery powders' observe what happens linked to materials they have seen before. What could they be used for? Explore those that dissolve in more detail e.g change other variables Explore evaporation-again exploring variables, exploring changes over time, making crystals P.I.N statements for objects made with different materials e.g spoons made from glass and answer questions e.g 'Why are pans not made from wood?'

• demonstrate that dissolving, mixing and changes of state are reversible changes explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda	Making smores-reversible and irreversible changes e.g melting chocolate and and burning marshmallows

Ipad ideas for science

- Use of Hologo (AR app)
- Google Expeditions (science AR)
- Keynote animation of scientific concept (water cycle, forces, magnets, circuit)
- Use of numbers app to show data/results
- Using time-lapse to record plants growing
- 'Bug Hunt Bingo' on keynote
- Create a quiz on keynote
- Screen shot and narrate over the top (using screen record)
- Record selfie facts about a scientific concept
- Use of slo-mo function on camera (e.g. to show forces)
- Narrate over AR (using screen record)
- Using pages app to keep a journal of learning
- Use of Green screen (scientific report)
- Using Chatterpix – to share facts learned
- Photo journal