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|  | **Term 1** | **Term 2** | | **Term 3** | | **Term 4** | **Term 5** | **Term 6** |
| **Y1** | **Materials**  distinguish between an object and the  material from which it is made  identify and name a variety of everyday  materials, including wood, plastic, glass,  metal, water, and rock  describe the simple physical properties of a  variety of everyday materials  compare and group together a variety of  everyday materials on the basis of their  simple physical properties | | | **Animals including humans**  identify and name a variety of common  animals including fish, amphibians, reptiles,  birds and mammals  identify and name a variety of common  animals that are carnivores, herbivores and  omnivores  describe and compare the structure of a  variety of common animals (fish, amphibians,  reptiles, birds and mammals, including pets)  identify, name, draw and label the basic parts  of the human body and say which part of the body is associated with each sense | | | **Plants**  identify and name a variety of common wild  and garden plants, including deciduous and  evergreen trees.  identify and describe the basic structure of a  variety of common flowering plants, including  trees | |
| **Working Scientifically objectives:**  observing closely, using simple equipment; performing simple tests; identifying and classifying; using their observations and ideas to suggest answers to questions; gathering and recording data to help in answering questions. | | | | | | | |
| **Enquiry types and questions:**  **Observing changes over time:** What happens to materials over time if we bury them in the ground?  **Identifying, classifying and grouping:** We need to choose materials to make an umbrella- which materials are waterproof? Which materials will float and which will sink?  **Comparative testing:** Which materials are the most absorbent?  **Research using secondary sources:** How are bricks made? Which materials can be recycled? | | | **Enquiry types and questions:**  **Identifying, classifying and grouping:** What are the names of our body parts?  How can we group the animals in the pet shop/zoo/in the school grounds?  **Pattern seeking:** Do you get better at smelling as you get older?  **Comparative testing:** Is our sense of smell better when we can’t see?  **Research using secondary sources:** How are the animals in ….. different to the ones that we find in  Britain? Do all animals have the same senses as humans? | | | **Enquiry types and questions:**  **Observing changes over time:** How does a daffodil bulb/oak tree change over the year?  **Identifying, classifying and grouping:** How can we sort the leaves that we collected on our walk?  **Pattern seeking:** Do trees with bigger leaves lose their leaves first in autumn? Is there a pattern where we find moss growing in the school grounds?  **Comparative testing and fair testing:** Which type of compost grows the tallest sunflower? Which trees have the biggest leaves?  **Research using secondary sources:** What are the most common British plants and where can we find them? | |
| **Explorify resources**  **Observing changes over time:** [Bonkers Bubbles](https://explorify.wellcome.ac.uk/en/activities/zoom-in-zoom-out/bonkers-bubbles)  [Liquid densities](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/liquid-densities)  **Pattern seeking:** [Burly bridges](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/burly-bridges)  [Functional footwear](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/functional-footwear)  [Protective measures](https://explorify.wellcome.ac.uk/en/activities/mystery-bag/protective-measures)  **Identifying, classifying and grouping:** [Unusual houses](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/unusual-houses)  [Wonderful wheels](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/wonderful-wheels)  [Maritime medley](https://explorify.wellcome.ac.uk/en/activities/mystery-bag/maritime-medley)  [Synthetic selection](https://explorify.wellcome.ac.uk/en/activities/mystery-bag/synthetic-selection)  **Comparative testing:** [Which is the bendiest?](https://explorify.wellcome.ac.uk/en/activities/the-big-question/which-is-the-bendiest)  [Unusual plant pots](https://explorify.wellcome.ac.uk/en/activities/problem-solvers/unusual-plant-pots)  **Research** What if every material was [rigid](https://explorify.wellcome.ac.uk/en/activities/what-if/every-material-was-rigid), or [stretchy](https://explorify.wellcome.ac.uk/en/activities/what-if/every-material-was-stretchy), or [transparent](https://explorify.wellcome.ac.uk/en/activities/what-if/all-materials-were-transparent)?  [What if your school banned paper?](https://explorify.wellcome.ac.uk/en/activities/what-if/your-school-banned-paper) | | | **Explorify resources**  **Observing changes over time:** [Unexpected eggs](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/unexpected-eggs)  [Looking after baby](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/looking-after-baby)  **Pattern seeking:** [Special delivery](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/special-delivery)  [Prehistoric shapes](https://explorify.wellcome.ac.uk/en/activities/mystery-bag/prehistoric-shapes)  **Identifying, classifying and grouping:** [Baby animals](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/baby-animals)  [Hot-steppers](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/hot-steppers)  [Say cheese](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/say-cheese)  [Spooky animals](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/spooky-animals)  **Comparative testing:** [Bird feeders](https://explorify.wellcome.ac.uk/en/activities/problem-solvers/bird-feeders)  [How would you make a shelter for a human?](https://explorify.wellcome.ac.uk/en/activities/the-big-question/how-would-you-make-a-shelter-for-a-human)  **Research** [What if humans hibernated?](https://explorify.wellcome.ac.uk/en/activities/what-if/humans-hibernated)  [What if we couldn’t smell things?](https://explorify.wellcome.ac.uk/en/activities/what-if/we-couldnt-smell-things) | | | **Explorify resources**  **Observing changes over time:** [Rich pickings](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/rich-pickings)  [Spring flowers](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/spring-flowers)  [Shooting sprouts](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/shooting-sprouts)  **Pattern seeking:** [Types of apple](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/types-of-apple)  [Winter scenes](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/winter-scenes)  [Brown and sticky](https://explorify.wellcome.ac.uk/en/activities/zoom-in-zoom-out/brown-and-sticky)  **Identifying, classifying and grouping:** [Timewarp plants](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/timewarp-plants)  [Types of leaves](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/types-of-leaves)  [Brill gills](https://explorify.wellcome.ac.uk/en/activities/zoom-in-zoom-out/brill-gills)  [Curious crown](https://explorify.wellcome.ac.uk/en/activities/zoom-in-zoom-out/curious-crown)  **Comparative testing:** [Do you need big seeds to grow big plants?](https://explorify.wellcome.ac.uk/en/activities/the-big-question/do-you-need-big-seeds-to-grow-big-plants)  **Research** [What if plants could move from one place to another?](https://explorify.wellcome.ac.uk/en/activities/what-if/plants-could-move-from-one-place-to-another) | |
| **Key Scientists**  **Martin Brock** (XelfleX inventor, nanotechnology engineer)  **Charles Macintosh (**Inventor of waterproof fabric) | | | **Key Scientists**  Chris Packham (Animal Conservation-ist), Steve Irwin (Crocodile Hunter, conservationist and TV presenter) | | | **Key Scientists**  Beatrix Potter (Author & Botanist) | |
| **Writing opportunities** | | | **Writing opportunities** | | | **Writing opportunities** | |
| **DT links:**  **mechanisms: wheels and axles** [1\_2 Wheels and axles.pdf](https://drive.google.com/open?id=1G1VwDiioyFc8w2geVCVlpBsC4nTDH9wR)  **freestanding structures** [1\_2 Freestanding structures.pdf](https://drive.google.com/open?id=1480i4wcLlW-XJ2r4BH0e91v_kZov_VgE) | | |  | | |  | |
| **Seasonal changes**  Observe changes across the four seasons  Observe and describe weather associated with the four seasons and how day length varies | | | | | | | |
| **Enquiry types and questions:**  **Identifying, classifying and grouping:** How would you group these things based on which season you are most likely to see them in?  **Pattern seeking**: Does the wind always blow the same way?  **Comparative testing and fair testing**: In which season does it rain the most?  **Research using secondary sources**: Are there plants that are in flower every season? What are they? | | | | | | | |
| **Key Scientists**  Dr Steve Lyons (Extreme Weather), Holly Green (Meteorologist) | | | | | **Writing opportunities** | | |

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|  | **Term 1** | **Term 2** | | | **Term 3** | **Term 4** | **Term 5** | **Term 6** |
| **Y2** | **Living things and their habitats**  explore and compare the difference between  things that are living, dead, and things that  have never been alive    identify that most living things live in habitats  to which they are suited and describe how  different habitats provide the basic needs of  different kinds of animals and plants, and how  they depend on each other    identify and name a variety of plants and  animals in their habitats, including  micro-habitats    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 | | | | **Animals including humans**  notice that animals, including humans, have  offspring which grow into adults    find out about and describe the basic needs of animals, including humans, for survival  (water, food and air)    describe the importance for humans of exercise, eating the right amounts of different  types of food, and hygiene | **Materials**  identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses    find out how the shapes of solid objects made from some materials can be changed by  squashing, bending, twisting and stretching | **Plants**  observe and describe how seeds and bulbs  grow into mature plants    find out and describe how plants need water,  light and a suitable temperature to grow and  stay healthy  KS1 assessments due at end of term | Revision of key learning/STEM activities/further study of key scientists |
| **Working Scientifically objectives:**  observing closely, using simple equipment; performing simple tests; identifying and classifying; using their observations and ideas to suggest answers to questions; gathering and recording data to help in answering questions. | | | | | | | |
| **Enquiry types and questions:**  **Observing changes over time:** How does the school pond change over the year?  **Identifying, classifying and grouping**: How can we identify the trees that we observed in our tree hunt? How would you group these plants and animals based on what habitat you would find them in? How can you group things to show which are living, dead or have never been alive?  **Pattern seeking**: What conditions do woodlice prefer to live in?  Where can we find the most worms/which habitat do worms prefer?  **Comparative testing and fair testing**: Is there the same level of light in the evergreen wood compared to the deciduous wood?  **Research using secondary sources**: How does a cactus survive in a desert with no water? How does the habitat of the Arctic compare to the habitat of the rainforest? | | | | **Enquiry types and questions:**  **Observing changes over time:** How does a tadpole change over time? How much food and drink do I have over the week?  **Identifying, classifying and grouping:** Which offspring belongs to which animals?  **Comparative testing and fair testing**: Do amphibians have more in common with reptiles or fish?  **Research using secondary sources**: What do you need to do to look after a pet dog/cat/lizard to keep it healthy? What food do you need in a healthy diet and why? | **Enquiry types and questions:**  **Observing changes over time:** How long do bubble bath bubbles last for? Would a paper boat float forever?  **Identifying, classifying and grouping:** Which materials are shiny and which are dull? Which are transparent and which are opaque? Which are flexible and which are rigid?  **Comparative testing and fair testing**: Which shape makes the strongest paper bridge? Which material would be best for the roof of the little pig’s house?  **Research using secondary sources**: How have the materials we use changed over time? How are plastics made? | **Enquiry types and questions:**  **Observing changes over time:** What happens to my bean after I have planted it?  **Pattern seeking:** Do bigger seeds grow into bigger plants?  **Comparative testing and fair testing:** Do cress seeds grow quicker inside or outside? | **Enquiry types and questions:** |
| **Explorify resources**  **Observing changes over time:** [Sandy adventurers](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/sandy-adventurers)  **Pattern seeking:** [Busy bee](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/busy-bee)  **Identifying, classifying and grouping:** [Australian animals](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/australian-animals)  [Mystery markings](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/mystery-markings)  [Savannah sidekicks](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/savanna-sidekicks)  **Comparative testing:**  **Research** [How would you survive in a rainforest?](https://explorify.wellcome.ac.uk/en/activities/the-big-question/how-would-you-survive-in-a-rainforest) | | | | **Explorify resources**  **Observing changes over time:** [Unexpected eggs](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/unexpected-eggs)  [Looking after baby](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/looking-after-baby)  **Pattern seeking:** [Special delivery](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/special-delivery)  [Prehistoric shapes](https://explorify.wellcome.ac.uk/en/activities/mystery-bag/prehistoric-shapes)  **Identifying, classifying and grouping:** [Baby animals](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/baby-animals)  [Hot-steppers](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/hot-steppers)  [Say cheese](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/say-cheese)  [Spooky animals](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/spooky-animals)  **Comparative testing:** [Bird feeders](https://explorify.wellcome.ac.uk/en/activities/problem-solvers/bird-feeders)  [How would you make a shelter for a human?](https://explorify.wellcome.ac.uk/en/activities/the-big-question/how-would-you-make-a-shelter-for-a-human)  **Research** [What if humans hibernated?](https://explorify.wellcome.ac.uk/en/activities/what-if/humans-hibernated)  [What if we couldn’t smell things?](https://explorify.wellcome.ac.uk/en/activities/what-if/we-couldnt-smell-things)[What if my bones were bendy?](https://explorify.wellcome.ac.uk/en/activities/what-if/my-bones-were-bendy) | **Explorify resources**  **Observing changes over time:** [Bonkers Bubbles](https://explorify.wellcome.ac.uk/en/activities/zoom-in-zoom-out/bonkers-bubbles)  [Liquid densities](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/liquid-densities)  **Pattern seeking:** [Burly bridges](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/burly-bridges)  [Functional footwear](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/functional-footwear)  [Protective measures](https://explorify.wellcome.ac.uk/en/activities/mystery-bag/protective-measures)  **Identifying, classifying and grouping:** [Unusual houses](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/unusual-houses)  [Wonderful wheels](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/wonderful-wheels)  [Maritime medley](https://explorify.wellcome.ac.uk/en/activities/mystery-bag/maritime-medley)  [Synthetic selection](https://explorify.wellcome.ac.uk/en/activities/mystery-bag/synthetic-selection)  **Comparative testing:** [Which is the bendiest?](https://explorify.wellcome.ac.uk/en/activities/the-big-question/which-is-the-bendiest)  [Unusual plant pots](https://explorify.wellcome.ac.uk/en/activities/problem-solvers/unusual-plant-pots)  **Research** What if every material was [rigid](https://explorify.wellcome.ac.uk/en/activities/what-if/every-material-was-rigid), or [stretchy](https://explorify.wellcome.ac.uk/en/activities/what-if/every-material-was-stretchy), or [transparent](https://explorify.wellcome.ac.uk/en/activities/what-if/all-materials-were-transparent)?  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| **Key Scientists**  Terry Nutkins (TV Presenter), Liz Bonnin (Conservationist),  Gerald Durrell (naturalist, zookeeper, conservationist) | | | | **Key Scientists**  Adelle Davis (20th Century Nutritionist), Robert Winston (Human Scientist), Florence Nightingale Pioneer of modern nursing in GB | **Key Scientists**  Julie Brusaw Solar Roadways inventor, material engineer, John Loudon McAdam Inventor of macadam road surfacing, **Joe Zekoski** Developer of the BH03 tyre,  **John Boyd Dunlop** Developed inflatable rubber tyres | **Key Scientists**  **Joseph Banks** (Botanist)  Alan Titchmarsh (Botanist & Gardener) | **Key Scientists** |
| **Writing opportunities** | | | | **Writing opportunities** | **Writing opportunities** | **Writing opportunities** | **Writing opportunities** |
|  |  | | | | **DT links**  **Year ½ food unit**[1\_2 Preparing fruit and vegetables.pdf](https://drive.google.com/open?id=1bx1MvDSMvMHRUoisvwF5xcQss6Eqojjr) | **DT links**  **Y2 textiles unit:** 2D shape to 3D product [3\_4 2D shape to 3D product.pdf](https://drive.google.com/open?id=1y--kvI495Vq31HOEcdDcfFcZo09jVBmA) |  |  |

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|  | **Term 1** | **Term 2** | | **Term 3** | | **Term 4** | **Term 5** | **Term 6** |
| **Y3/4** | **Living things and their habitats (Y4)**  recognise that living things can be grouped in  a variety of ways  explore and use classification keys to help group, identify and name a variety of living  things in their local and wider environment    recognise that environments can change and  that this can sometimes pose dangers to  living things | **Animals including humans (Y3/4)**  (Y3) 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    (Y3) identify that humans and some other animals  have skeletons and muscles for support,  protection and movement  (Y4) describe the simple functions of the basic parts of the digestive system in humans    (Y4) identify the different types of teeth in humans and their simple functions    (Y4) construct and interpret a variety of food chains, identifying producers, predators and prey | | **Forces and magnets (Y3)**  compare how things move on different surfaces    notice that some forces need contact between  two objects, but magnetic forces can act at a  distance    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 on whether they  are attracted to a magnet, and identify some  magnetic materials    describe magnets as having two poles    predict whether two magnets will attract or repel  each other, depending on which poles are  facing | | **Light (Y3)**  recognise that they need light in order to see  things and that the dark is the absence of light    notice that light is reflected from surfaces    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 | **Sound (Y4)**  identify how sounds are made, associating some of them with something vibrating    recognise that vibrations from sounds travel through a medium to the ear    find patterns between the pitch of a sound and features of the object that produced it    find patterns between the volume of a sound and the strength of the vibrations that  produced it    recognise that sounds get fainter as the distance from the sound source increase | **Materials (Rocks/fossils) (Y3)**  compare and group together different kinds of  rocks on the basis of their appearance and  simple physical properties    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 |
| **Working Scientifically objectives:**  asking relevant questions and using different types of scientific enquiries to answer them; setting up simple practical enquiries, comparative and fair tests; making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers; gathering, recording, classifying and presenting data in a variety of ways to help in answering questions; recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables; reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions; using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions; identifying differences, similarities or changes related to simple scientific ideas and processes; using straightforward scientific evidence to answer questions or to support their findings. | | | | | | | |
| **Enquiry types and questions:**  **Observing changes over time**: How does the variety of invertebrates in the school grounds change over the year?  **Identifying, classifying and grouping:** Can we use the classification keys to identify all the animals from pond dipping/school survey?  **Pattern seeking**: How has the use of insecticides affected the bee population?  **Comparative testing and fair testing:** Does the amount of light affect how many woodlice move around?  **Research using secondary sources:** Why are people cutting down rainforests and what effect does that have? | **Enquiry types and questions:**  **Observing changes over time**: How does an egg shell change when it is left in cola? (Y4)  **Identifying, classifying and grouping:** How do the skeletons of different animals compare? (Y3) How can we group the food that we eat? (Y3) What are the names for the organs involved in the digestive system? (Y4)  How can we organise teeth into groups? (Y4)  **Pattern seeking**: Do male humans have larger skulls than female humans? (Y3) Are foods that are high in energy always high in sugar? (Y4)  **Comparative testing and fair testing:** How does the skull circumference of a girl compare with that of a boy? (Y3)  **Research using secondary sources:** Why do different types of vitamins keep us healthy and which foods can we find them in? (Y3) How do dentists fix broken teeth? (Y4) | | | **Enquiry types and questions:**  **Observing changes over time**: If we magnetise a pin, how long does it stay magnetised for?  **Identifying, classifying and grouping:** Which materials are magnetic?  **Pattern seeking:** Does the size and shape of a magnet affect how strong it is?  **Comparative testing and fair testing:** Which magnet is the strongest? How does the mass of an object affect how much light can pass through?  **Research using secondary sources:** How does a compass work? | **Enquiry types and questions:**  **Observing changes over time**: When is our classroom darkest?  Is the sun the same brightness all day?  **Identifying, classifying and grouping:** Can you sort the light sources into natural and artificial sources?  **Comparative testing and fair testing:** Which pair of sunglasses will be best at protecting our eyes?  How does the number of layers of transparent plastic affect how much light can pass through? How does the distance between the shadow puppet and the screen affect the size of the shadow?  **Research using secondary sources:** How does the sun make light? | **Enquiry types and questions:**  **Comparative testing and fair testing:** How does the volume of a drum change as you move further away from it? (Y4)  How does the length of a guitar string/tuning fork affect the pitch of the sound? (Y4)  **Research using secondary sources:** Do all animals have the same hearing range? (Y4) | **Enquiry types and questions:**  **Observing changes over time**:  What happens when water keeps dripping on a sandcastle?  **Identifying, classifying and grouping:** Can you use the identification key to find out the name of each of the rocks in your collection?  **Pattern seeking:** Is there a pattern where we can find volcanoes on Earth?  **Comparative testing and fair testing:** Which soil absorbs the most water? How does adding different amounts of sand to soil affect how quickly water drains through it?  **Research using secondary sources:** Who was Mary Anning and what did she discover? |
| **Explorify resources**  **Observing changes over time:** [Barnacle dive](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/barnacle-dive)  [Family meal](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/family-meal)  **Pattern seeking:** [Friends of flowers](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/friends-of-flowers)  **Identifying, classifying and grouping:** [High rise inhabitants](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/high-rise-inhabitants)  [Make a mark](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/make-a-mark)  **Comparative and fair testing:**[Make a challenge-proof creature](https://explorify.wellcome.ac.uk/en/activities/mission-survive/make-a-challenge-proof-creature)  **Research:** [What if we did not plant trees?](https://explorify.wellcome.ac.uk/en/activities/what-if/we-did-not-plant-trees) | **Explorify resources**  **Observing changes over time:** [Thirsty work](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/thirsty-work)  [The damselfly’s day](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/the-damselflys-day)  **Pattern seeking:** [Odd octopus](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/odd-octopus)  **Identifying, classifying and grouping:** [Topsy turvy](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/topsy-turvy)  [Weird walkers](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/weird-walkers)  [Spot the difference](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/spot-the-difference)  **Comparative and fair testing:** [Which breakfast is best?](https://explorify.wellcome.ac.uk/en/activities/the-big-question/which-breakfast-is-best)  **Research:** [What if we ate insects?](https://explorify.wellcome.ac.uk/en/activities/what-if/we-ate-insects) | | | **Explorify resources**  **Observing changes over time:** [Dancing raisins](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/dancing-raisins)  [Egg in bottle](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/egg-in-bottle)  **Pattern seeking:** [Magnets](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/magnets)  [There’s a hole in my bottle](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/theres-a-hole-in-my-bottle)  **Identifying, classifying and grouping:** [River crossing](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/river-crossing)  [Moving propellers](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/moving-propellers)  **Comparative and fair testing:** [Rocket launchers](https://explorify.wellcome.ac.uk/en/activities/problem-solvers/rocket-launchers),  [Marbles](https://explorify.wellcome.ac.uk/en/activities/mission-survive/marbles)  [Newspaper towers](https://explorify.wellcome.ac.uk/en/activities/problem-solvers/newspaper-towers)  **Research:** [What if all transport was electric?](https://explorify.wellcome.ac.uk/en/activities/what-if/all-transport-was-electric) | **Explorify resources**  **Observing changes over time:** [Exploding lights](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/exploding-lights)  **Pattern seeking:** [Shadow shapes](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/shadow-shapes)  **Identifying, classifying and grouping:**[Sources of light](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/sources-of-light)  **Comparative and fair testing:** [Lightproof your secret den](https://explorify.wellcome.ac.uk/en/activities/problem-solvers/lightproof-your-secret-den)  **Research:** [What if we didn’t have mirrors?](https://explorify.wellcome.ac.uk/en/activities/what-if/we-didnt-have-mirrors) | **Explorify resources**  **Observing changes over time:** [Sound of silence](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/the-sound-of-silence)  **Pattern seeking:** [Rice and rhythm](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/rice-and-rhythm)  **Identifying, classifying and grouping:** [What’s that sound?](https://explorify.wellcome.ac.uk/en/activities/problem-solvers/what-s-that-sound)  **Comparative and fair testing:** [Protect your ears](https://explorify.wellcome.ac.uk/en/activities/problem-solvers/protect-your-ears)  **Research:** [Lyre liar](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/lyre-liar) | **Explorify resources**  **Observing changes over time:** [Sandcastle](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/sandcastle)  **Pattern seeking:** [Bubbly water](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/bubbly-water)  **Identifying, classifying and grouping:** [Mysterious material](https://explorify.wellcome.ac.uk/en/activities/zoom-in-zoom-out/mysterious-material)  [Kaleidoscope of colour](https://explorify.wellcome.ac.uk/en/activities/zoom-in-zoom-out/kaleidoscope-of-colour)  [Surprising surface](https://explorify.wellcome.ac.uk/en/activities/zoom-in-zoom-out/surprising-surface)  **Comparative and fair testing:**[Which rock would be best for a skate ramp?](https://explorify.wellcome.ac.uk/en/activities/the-big-question/which-rock-would-be-best-for-a-skate-ramp)  **Research:** [Do rocks stay the same for ever?](https://explorify.wellcome.ac.uk/en/activities/the-big-question/do-rocks-stay-the-same-forever) |
| **Key Scientists**  Seirian Sumner Evolutionary biologist and behavioural ecologist  **Jane Goodall** Primatologist  Rachel Carson- marine biologist- researched polluting effect of pesticides  Cindy Looy  (Environmental Change and Extinction) | **Key Scientists**  Leoanrdo da Vinci (first anatomically correct drawings of bones)  **Andreas Vesalius:** founder of modern observational anatomy. First comprehensive account and illustrations of the human skeleton  Ivan Pavlov  (Digestive System-  Mechanisms) | | | **Key Scientists**  **Michael Faraday**- invented the electric motor and worked on magnetism and creation of electromagnets | **Key Scientists**  **Ibn al-Haytham**  Conducted important experiments on light and how eyes work (optics) | **Key Scientists**  **Alexander Graham Bell**- inventor of the telephone  Thomas Edison (see year 6)  Aristotle  (Sound Waves)  Gailileo Galilei  (Frequency and Pitch of Sound Waves | **Key Scientists**  **Mary Anning**  Palaeontologist and fossil collector  Inge Lehmann  (Earth’s Mantle)  William Smith Fossils strata  Katia Krafft - Geologist and Volcanologist  Kay Behrensmeyer  paleontologist |
| **Writing opportunities** | **Writing opportunities** | | | **Writing opportunities** | **Writing opportunities** | **Writing opportunities** | **Writing opportunities** |
|  |  | **DT links: year 3/4 food** [3\_4 Healthy and varied diet.pd](https://drive.google.com/open?id=1L-CU3QLknDQ1sB7Gm0A4tL8QPKR0Wn7E) | | |  |  |  |  |

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|  | **Term 1** | **Term 2** | | **Term 3** | | **Term 4** | **Term 5** | **Term 6** |
| **Y4/5** | **States of matter (Y4)**  (Y4) compare and group materials together,according to whether they are solids, liquids  or gases  (Y4 )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 (°C)  (Y4) identify the part played by evaporation and  condensation in the water cycle and associate the rate of evaporation with temperature  **Properties and changes of materials (Y5)**  (Y5) 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  (Y5) know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution  (Y5)use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating  (Y5) give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic  (Y5) demonstrate that dissolving, mixing and changes of state are reversible changes  (Y5) 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. | **Sound (Y4)**  identify how sounds are made, associating some of them with something vibrating    recognise that vibrations from sounds travel through a medium to the ear    find patterns between the pitch of a sound and features of the object that produced it    find patterns between the volume of a sound and the strength of the vibrations that  produced it    recognise that sounds get fainter as the distance from the sound source increase | | **Electricity (Y4)**  identify common appliances that run on  electricity    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    recognise that a switch opens and closes a  circuit and associate this with whether or not  a lamp lights in a simple series circuit    recognise some common conductors and  insulators, and associate metals with being  good conductor | | **Forces (Y5)**  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 | **Living things and their habitats (Y4/5)**  (Y4) recognise that living things can be grouped in  a variety of ways    (Y4) explore and use classification keys to help  group, identify and name a variety of living  things in their local and wider environment    (Y4) recognise that environments can change and that this can sometimes pose dangers to living things    (Y5) describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird    (Y5) describe the life process of reproduction in  some plants and animals | **Animals including humans (Y4/5)**  (Y4) describe the simple functions of the basic parts of the digestive system in humans    (Y4) identify the different types of teeth in humans and their simple functions    (Y4) construct and interpret a variety of food chains, identifying producers, predators and prey  (Y5) describe the changes as humans develop to old age |
| **Working Scientifically objectives:**  asking relevant questions and using different types of scientific enquiries to answer them; setting up simple practical enquiries, comparative and fair tests; making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers; gathering, recording, classifying and presenting data in a variety of ways to help in answering questions; recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables; reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions; using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions; identifying differences, similarities or changes related to simple scientific ideas and processes; using straightforward scientific evidence to answer questions or to support their findings. | | | | | | | |
| **Enquiry types and questions:**  **Observing changes over time**: Which materials is best for keeping our hot chocolate warm? (Y4) How does the level of water in a glass change when left on the windowsill? (Y4)  How does the mass of an ice cube change over time? (Y4) How does a container of salt water change over time? (Y5) How does a sugar cube change as it is put in a glass of water? (Y5) How does a nail in salt water change over time? (Y5)  **Identifying, classifying and grouping:** Can you group these materials and objects into solids, liquids and gases? (Y4) How would you sort these objects/materials based on their temperature? (Y4)  **Pattern seeking:** Is there a pattern in how long it takes different sized ice lollies to melt? (Y4)  Do all stretchy materials stretch in the same way? (Y5)  **Comparative testing and fair testing:** How does the mass of a block of ice affect how long it takes to melt? (Y4) How does the surface area of a container of water affect how long it takes to evaporate? (Y4) How does the temperature of tea affect how long it takes for a sugar cube to dissolve? (Y5) Which type of sugar dissolves the fastest? (Y5)  **Research using secondary sources:** What are microplastics and how are they harming our planet? (Y5) | **Enquiry types and questions:**  **Comparative testing and fair testing:** How does the volume of a drum change as you move further away from it? (Y4)  How does the length of a guitar string/tuning fork affect the pitch of the sound? (Y4)  **Research using secondary sources:** Do all animals have the same hearing range? (Y4 | | | **Enquiry types and questions:**  **Identifying, classifying and grouping:** How would you group these electrical devices based on where the electricity comes from? (Y4)  **Pattern seeking:** Which room has the most electrical sockets in a house? (Y4)  **Comparative testing and fair testing:** How does the thickness of a conducting material affect how bright the lamp is? (Y4)  **Research using secondary sources:** How has electricity changed the way we live? (Y4)  How does a light bulb work? (Y4) | **Enquiry types and questions:**  **Observing changes over time:**How long does a pendulum swing for before it stops? (Y5)  **Identifying, classifying and grouping:** Can you identify and label all the forces acting on these objects in each of these situations (Y5)?  **Pattern seeking:** Do all objects fall through water in the same way? (Y5)  **Comparative testing and fair testing:** How does the angle of launch affect how far a paper rocket will go? (Y5)  How does the surface area of a container affect the time it takes to sink? (Y5)  How does the surface area of a parachute affect the time it takes to fall to the ground? (Y5)  Which shape parachute takes the longest to fall? (Y5) | **Enquiry types and questions:**  **Observing changes over time:** How does the variety of invertebrates in the school grounds change over the year? (Y4) How do brine shrimp/tadpoles change over their lifetime? (Y5) How does a bean change as it germinates? (Y5)  **Identifying, classifying and grouping:** Can we use the classification keys to **identify** all the animals from pond dipping/school survey? (Y4)  **Pattern seeking**:How has the use of insecticides affected the bee population? (Y4)  Is there a relationship between a mammal’s size and its gestation period? (Y5)  **Comparative testing and fair testing:**Does the amount of light affect how many woodlice move around? (Y4)  **Research using secondary sources:** Why are people cutting down rainforests and what effect does that have? (Y4)  What are the differences between the life cycle of an insect and a mammal? (Y5) | **Enquiry types and questions:**  **Observing changes over time:** How does an egg shell change when it is left in cola? (Y4)  **Identifying, classifying and grouping:** What are the names for the organs involved in the digestive system? (Y4)  How can we organise teeth into groups? (Y4)  Can you identify all the stages in the human life cycle? (Y5)  **Pattern seeking:** Are foods that are high in energy always high in sugar? (Y4)  Are the oldest children in our school the tallest? (Y5)  **Comparative testing and fair testing:** How does age affect a human;s reaction time? (Y5)  Who grows fastest, boys or girls? (Y5)  **Research using secondary sources:** How do dentists fix broken teeth? (Y4)  Why do people get grey/white hair when they get older? (Y5) |
| **Explorify resources**  **Observing changes over time:** [Top of the pops](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/top-of-the-pops) **(Y4)** [Brilliantly bouncy egg](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/brilliantly-bouncy-egg) (Y5)  [Shaking sensation](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/shaking-sensation) **(Y5)**  **Pattern seeking:** [Multiple liquid densities](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/multiple-liquid-densities) **(Y4)** [Melting ice cubes](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/melting-ice-cubes) **(Y5)**  **Identifying, classifying and grouping:** [Nifty naturals](https://explorify.wellcome.ac.uk/en/activities/mystery-bag/nifty-naturals) (Y4) [Totally organic](https://explorify.wellcome.ac.uk/en/activities/mystery-bag/totally-organic) (Y4) [Branching out](https://explorify.wellcome.ac.uk/en/activities/mystery-bag/branching-out) **(Y4)** [Electrifying metals](https://explorify.wellcome.ac.uk/en/activities/mystery-bag/electrifying-metals) (Y5)  [Interesting insulators](https://explorify.wellcome.ac.uk/en/activities/mystery-bag/interesting-insulators) **(Y5)**  **Comparative and fair testing:** [Water carriers](https://explorify.wellcome.ac.uk/en/activities/problem-solvers/water-carriers) (Y4)  [Ice lollies](https://explorify.wellcome.ac.uk/en/activities/mission-survive/ice-lollies) (Y4) [How do smells travel?](https://explorify.wellcome.ac.uk/en/activities/the-big-question/how-do-smells-travel) **(Y4)** [How do you protect an egg?](https://explorify.wellcome.ac.uk/en/activities/mission-survive/how-do-you-protect-an-egg) (Y5)  [How strong is our hair?](https://explorify.wellcome.ac.uk/en/activities/the-big-question/how-strong-is-our-hair) **(Y5)**  **Research:** [What if water couldn’t freeze?](https://explorify.wellcome.ac.uk/en/activities/what-if/water-couldnt-freeze)(Y4) [What if the sea was gloopy (like ketchup)?](https://explorify.wellcome.ac.uk/en/activities/what-if/the-sea-was-gloopy-like-ketchup) **(Y4)** [What if an astronaut gets thirsty?](https://explorify.wellcome.ac.uk/en/activities/what-if/an-astronaut-gets-thirsty) **(Y5)** | **Explorify resources**  **Observing changes over time:** [Sound of silence](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/the-sound-of-silence)  **Pattern seeking:** [Rice and rhythm](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/rice-and-rhythm)  **Identifying, classifying and grouping:** [What’s that sound?](https://explorify.wellcome.ac.uk/en/activities/problem-solvers/what-s-that-sound)  **Comparative and fair testing:** [Protect your ears](https://explorify.wellcome.ac.uk/en/activities/problem-solvers/protect-your-ears)  **Research:** [Lyre liar](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/lyre-liar) | | | **Explorify resources**  **Observing changes over time:**  **Pattern seeking:**  **Identifying, classifying and grouping:**  **Comparative and fair testing:**  **Research:** | **Explorify resources**  **Observing changes over time:** [3,2,1, lift off](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/3-2-1-lift-off)  **Pattern seeking:** [Blocks](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/blocks)  [Spinning spiral](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/spinning-spiral)  **Identifying, classifying and grouping:** [Shoot the breeze](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/shoot-the-breeze)  [Take your turn](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/take-your-turn)  **Comparative and fair testing:** [Take a whisk](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/take-a-whisk)  [Paper planes](https://explorify.wellcome.ac.uk/en/activities/problem-solvers/paper-planes)  **Research:** [What if there was no gravity?](https://explorify.wellcome.ac.uk/en/activities/what-if/there-was-no-gravity)  [What if brakes were automatic?](https://explorify.wellcome.ac.uk/en/activities/what-if/brakes-were-automatic) | **Explorify resources**  **Observing changes over time:** [Barnacle dive](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/barnacle-dive)  [Family meal](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/family-meal) **(Y4)**  **Pattern seeking:** [Friends of flowers](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/friends-of-flowers) **(Y4)** [Super seeds](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/super-seeds) **(Y5)**  **Identifying, classifying and grouping:** [High rise inhabitants](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/high-rise-inhabitants)  [Make a mark](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/make-a-mark) **(Y4)**  **Comparative and fair testing:** [Make a challenge-proof creature](https://explorify.wellcome.ac.uk/en/activities/mission-survive/make-a-challenge-proof-creature) **(Y4)** [Seeds](https://explorify.wellcome.ac.uk/en/activities/mission-survive/seeds) **(Y5)**  **Research:** [What if we did not plant trees?](https://explorify.wellcome.ac.uk/en/activities/what-if/we-did-not-plant-trees) **(Y4)** | **Explorify resources**  **Observing changes over time:** [The damselfly’s day](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/the-damselflys-day) **(Y4)** [Coming out to play](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/coming-out-to-play)  [Very hungry caterpillars](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/very-hungry-caterpillars) **(Y5)**  **Pattern seeking:** [Odd octopus](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/odd-octopus) **(Y4)**  **Identifying, classifying and grouping:** [Weird walkers](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/weird-walkers) (Y4)  [Spot the difference](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/spot-the-difference) **(Y4)** [Terrific tree dwellers](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/terrific-tree-dwellers) (Y5) [Light makers](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/light-makers) **(Y5)**  **Comparative and fair testing:**  **Research:** [What if the average lifespan of a human was 200?](https://explorify.wellcome.ac.uk/en/activities/what-if/the-average-lifespan-of-a-human-was-200) **(Y5)** |
| **Key Scientists**  **Daniel Farenheit** Invented temperature scale and mercury thermometer, Anders Celsius, Lord Kelvin  **Joe Keddie** Professor of Soft Matter Physics. He researches into the nanostructure of pressure-sensitive adhesives.  **Spencer Silver** Inventor of Post-it® notes | **Key Scientists**  **Alexander Graham Bell**- inventor of the telephone  Thomas Edison (see year 6)  Aristotle (Sound Waves)  Gailileo Galilei  (Frequency and Pitch of Sound Waves) | | | **Key Scientists**  Benjamin Franklin  Made discoveries about the relationship between lightning and electricity and invented the lightning rod | **Key Scientists**  **Isaac Newton-** gravity | **Key Scientists**  Seirian Sumner Evolutionary biologist and behavioural ecologist  **Jane Goodall Primatologist**  Rachel Carson- marine biologist- researched polluting effect of pesticides  Cindy Looy (Environmental Change and Extinction) James Brodie (Reproduction of Plants by Spores) | **Key Scientists**  Ivan Pavlov(Digestive System- Mechanisms)  Sarah Fowler OBE Marine biologist  **Sir David Attenborough** Naturalist and broadcaster |
| **Writing opportunities** | **Writing opportunities** | | | **Writing opportunities** | **Writing opportunities** | **Writing opportunities**  Persuasive writing- investigating an environmental issue affecting habitats | **Writing opportunities** |
|  |  |  | | | **DT link: electrical systems** simple circuits and switches [3\_4 Simple circuits and switches.pdf](https://drive.google.com/open?id=1tKUlSX8Ow1rBXFyDn_8Dx26a-SdgEaf2) | **DT link:**  **Levers and linkages**  [3\_4 Levers and linkages.pdf](https://drive.google.com/open?id=1CRXXHbO8RKQsDFGo5ul1bbP-y-peMBKv) |  |  |

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|  | **Term 1** | **Term 2** | | **Term 3** | | **Term 4** | **Term 5** | **Term 6** |
| **Y6** | **Forces (Y5)**  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 | **Earth and space (Y5)**  describe the movement of the Earth, and other planets, relative to the Sun    describe the movement of the Moon relative to the Earth    describe the Sun, Earth and Moon as  approximately spherical bodies    use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky | | **Light (Y6)**  recognise that light appears to travel in straight lines    use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye    explain that we see things because light travels from light sources to our eyes or from  light sources to objects and then to our eyes    use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them | | **States of matter (Y4)**  (Y4) compare and group materials together,according to whether they are solids, liquids  or gases  (Y4 )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 (°C)  (Y4) identify the part played by evaporation and  condensation in the water cycle and associate the rate of evaporation with temperature | **Properties and changes of materials (Y5)**  (Y5) 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  (Y5) know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution  (Y5)use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating  (Y5) give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic  (Y5) demonstrate that dissolving, mixing and changes of state are reversible changes  (Y5) 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. | **Animals including humans (Y5/6)**  (Y5) describe the changes as humans develop to old age  (Y6) identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood  (Y6) recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function  (Y6) describe the ways in which nutrients and water are transported within animals, including humans. |
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| **Working Scientifically objectives:**  planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary; taking measurements, using a range of scientific equipment, with increasing accuracy and precision; recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs; using test results to make predictions to set up further comparative and fair tests; using simple models to describe scientific ideas; reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations; identifying scientific evidence that has been used to support or refute ideas or arguments. | | | | | | | |
| **Enquiry types and questions:**  **Observing changes over time:**How long does a pendulum swing for before it stops?  **Identifying, classifying and grouping:** Can you identify and label all the forces acting on these objects in each of these situations?  **Pattern seeking:** Do all objects fall through water in the same way?  **Comparative testing and fair testing:** How does the angle of launch affect how far a paper rocket will go? How does the surface area of a container affect the time it takes to sink? How does the surface area of a parachute affect the time it takes to fall to the ground? Which shape parachute takes the longest to fall? | **Enquiry types and questions:**  **Identifying, classifying and grouping:** How would you organise all the objects in the solar system into groups?  Can you observe and identify all the phases in the life cycle of the Moon?  **Pattern seeking:** Is there a pattern between the size of a planet and the time it takes to travel around the sun?  **Research using secondary sources:** How have our ideas about the solar system changed over time? | | | **Enquiry types and questions:**  **Observing changes over time:** How does my shadow change over the day?  **Identifying, classifying and grouping:** Can you group these materials based on whether they are transparent or not?  Can you identify all the colours of light that make white light when mixed together? What colours do you get if you mix different colours of light together?  **Comparative testing and fair testing:** How does the length of daylight hours change in each season?  Which material is most reflective?  How does the angle that a light ray hits a plane mirror affect the angle at which it reflects off the surface? | **Enquiry types and questions:**  **Observing changes over time**: Which materials is best for keeping our hot chocolate warm? (Y4) How does the level of water in a glass change when left on the windowsill? (Y4)  How does the mass of an ice cube change over time? (Y4)  **Identifying, classifying and grouping:** Can you group these materials and objects into solids, liquids and gases? (Y4) How would you sort these objects/materials based on their temperature? (Y4)  **Pattern seeking:** Is there a pattern in how long it takes different sized ice lollies to melt? (Y4)  **Comparative testing and fair testing:** How does the mass of a block of ice affect how long it takes to melt? (Y4) How does the surface area of a container of water affect how long it takes to evaporate? (Y4) | **Enquiry types and questions:**  **Observing changes over time:** How does a container of salt water change over time?  How does a sugar cube change as it is put in a glass of water?  How does a nail in salt water change over time?  **Pattern seeking:** Do all stretchy materials stretch in the same way?  **Comparative testing and fair testing:** How does the temperature of tea affect how long it takes for a sugar cube to dissolve?  Which type of sugar dissolves the fastest?  **Research using secondary sources:** What are microplastics and how are they harming our planet? | **Enquiry types and questions:**  **Observing changes over time:** How does my heart rate change over the day? (Y6)  **Identifying, classifying and grouping:** Can you identify all the stages in the human life cycle? (Y5)  Which organs of the body make up the circulatory system? (Y6)  **Pattern seeking:** Are the oldest children in our school the tallest? (Y5)  Is there a pattern between the size and shape of a bird’s beak and the food it will eat? (Y6)  **Comparative testing and fair testing:** How does age affect a human’s reaction time? (Y5) Who grows fastest, boys or girls? (Y5) Which type of exercise has the greatest effect on our heart rate? (Y6) How does the length of time we exercise for affect our heart rate? (Y6) Can exercising regularly affect your lung capacity? (Y6)  **Research using secondary sources:** Why do people get grey/white hair when they get older? (Y5) |
| **Explorify resources**  **Observing changes over time:** [3,2,1, lift off](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/3-2-1-lift-off)  **Pattern seeking:** [Blocks](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/blocks)  [Spinning spiral](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/spinning-spiral)  **Identifying, classifying and grouping:** [Shoot the breeze](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/shoot-the-breeze)  [Take your turn](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/take-your-turn)  **Comparative and fair testing:** [Take a whisk](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/take-a-whisk)  [Paper planes](https://explorify.wellcome.ac.uk/en/activities/problem-solvers/paper-planes)  **Research:** [What if there was no gravity?](https://explorify.wellcome.ac.uk/en/activities/what-if/there-was-no-gravity)  [What if brakes were automatic?](https://explorify.wellcome.ac.uk/en/activities/what-if/brakes-were-automatic) | **Explorify resources**  **Observing changes over time:**  **Pattern seeking:**  **Identifying, classifying and grouping:**  **Comparative and fair testing:**  **Research:** | | | **Explorify resources**  **Observing changes over time:** [Light and time](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/light-and-time)  **Pattern seeking:** [Find your focus](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/find-your-focus)  **Identifying, classifying and grouping:** [Now you see me…](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/now-you-see-me)  **Comparative and fair testing:** [See round the bend](https://explorify.wellcome.ac.uk/en/activities/problem-solvers/see-round-the-bend)  **Research:** [What if there were two suns?](https://explorify.wellcome.ac.uk/en/activities/what-if/there-were-two-suns) | **Explorify resources**  **Observing changes over time:** [Top of the pops](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/top-of-the-pops)  **Pattern seeking:** [Multiple liquid densities](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/multiple-liquid-densities)  **Identifying, classifying and grouping:** [Nifty naturals](https://explorify.wellcome.ac.uk/en/activities/mystery-bag/nifty-naturals)  [Totally organic](https://explorify.wellcome.ac.uk/en/activities/mystery-bag/totally-organic)  [Branching out](https://explorify.wellcome.ac.uk/en/activities/mystery-bag/branching-out)  **Comparative and fair testing:** [Water carriers](https://explorify.wellcome.ac.uk/en/activities/problem-solvers/water-carriers)  [Ice lollies](https://explorify.wellcome.ac.uk/en/activities/mission-survive/ice-lollies)  [How do smells travel?](https://explorify.wellcome.ac.uk/en/activities/the-big-question/how-do-smells-travel)  **Research:** [What if water couldn’t freeze?](https://explorify.wellcome.ac.uk/en/activities/what-if/water-couldnt-freeze) [What if the sea was gloopy (like ketchup)?](https://explorify.wellcome.ac.uk/en/activities/what-if/the-sea-was-gloopy-like-ketchup) | **Explorify resources**  **Observing changes over time:** [Brilliantly bouncy egg](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/brilliantly-bouncy-egg)  [Shaking sensation](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/shaking-sensation)  **Pattern seeking:** [Melting ice cubes](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/melting-ice-cubes)  **Identifying, classifying and grouping:** [Electrifying metals](https://explorify.wellcome.ac.uk/en/activities/mystery-bag/electrifying-metals)  [Interesting insulators](https://explorify.wellcome.ac.uk/en/activities/mystery-bag/interesting-insulators)  **Comparative and fair testing:** [How do you protect an egg?](https://explorify.wellcome.ac.uk/en/activities/mission-survive/how-do-you-protect-an-egg)  [How strong is our hair?](https://explorify.wellcome.ac.uk/en/activities/the-big-question/how-strong-is-our-hair)  **Research:** [What if an astronaut gets thirsty?](https://explorify.wellcome.ac.uk/en/activities/what-if/an-astronaut-gets-thirsty) | **Explorify resources**  **Observing changes over time:** [Coming out to play](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/coming-out-to-play)  [Very hungry caterpillars](https://explorify.wellcome.ac.uk/en/activities/whats-going-on/very-hungry-caterpillars)  **Pattern seeking:** [Get your blood pumping](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/get-your-blood-pumping)  **Identifying, classifying and grouping:**[Terrific tree dwellers](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/terrific-tree-dwellers)  [Light makers](https://explorify.wellcome.ac.uk/en/activities/odd-one-out/light-makers)  **Comparative and fair testing:** [Does colour affect how we taste things?](https://explorify.wellcome.ac.uk/en/activities/the-big-question/does-colour-affect-how-we-taste-things)  **Research:** [What if the average lifespan of a human was 200?](https://explorify.wellcome.ac.uk/en/activities/what-if/the-average-lifespan-of-a-human-was-200) |
| **Key Scientists**  **Isaac Newton-** gravity | **Key Scientists**  Maggie Aderin-Pocock Astronomer and science communicator  **Nicolaus Copernicus** Proposed that the Sun was the centre of our universe  Emma England Aerospace engineer  **Galileo Galilei** Polymath  Zhang Heng Recognised that the moon reflects the light from the sun  Prof Brian Cox | | | **Key Scientists**  Ernesta Jonkute Developed Vantablack®, a super-black coating that holds the world record as the darkest human-made substance  Alhazen Pioneer of modern optics  **Thomas Edison**-invented the light bulb | **Key Scientists**  **Daniel Farenheit** Invented temperature scale and mercury thermometer, Anders Celsius, Lord Kelvin | **Key Scientists**  **Joe Keddie** Professor of Soft Matter Physics. He researches into the nanostructure of pressure-sensitive adhesives.  **Spencer Silver** Inventor of Post-it® notes | **Key Scientists**  Sarah Fowler OBE Marine biologist  **Sir David Attenborough** Naturalist and broadcaster  Sir Richard Doll  (Linking Smoking and Health Prob-lems)  Santorio Santorio-Anatomist  Dr. Katherine Dibb – Expert in Cardiovascu-lar Sciences |
| **Writing opportunities** | **Writing opportunities**  **Non-chronological report-** planets  **Biography-** one of the famous scientists | | | **Writing opportunities**  **Explanation text:** how we see | **Writing opportunities** | **Writing opportunities**  **Scientific write-up** of experiments and investigation | **Writing opportunities**  **Biography-** David Attenborough  **Explanation text**- circulatory system  **Diary entry**- point of view of red blood cell through circulatory system |
|  | **DT links:** pulleys and gears[5\_6 Pulleys or gears.pdf](https://drive.google.com/open?id=1Sk5i6v8c7w0hFyfopy_4f15XojlIsw2O) |  | | |  |  | **DT links**: investigating properties of materials- combining different fabric shapes [5\_6 Combining different fabric shapes.pdf](https://drive.google.com/open?id=1F9-xctVCz3xfD5thFcYLQu-iWIHgCX3-) | **DT links**  Year 5/6 food unit[5\_6 Celebrating culture and seasonality.pdf](https://drive.google.com/open?id=15C82AyRaGi8Sv3RMZtjuVvXCiVivGRv-) |