



Year 4 Animals Including Humans – Food and Digestion




Understand salivary glands and taste buds




Know the different types of teeth




Understand the intestines



Understand the food pyramid and why it is important

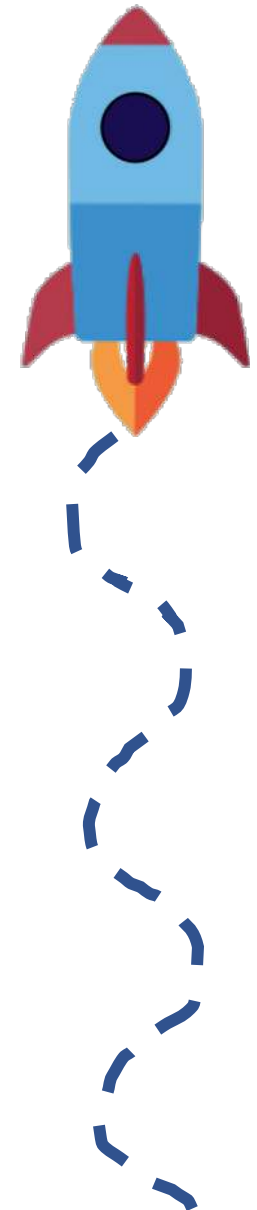


Know about vitamins and minerals



Understand the food chain, know how natural cycles work

| Scientific Enquiry Covered | Rocket Words Covered | Name of Task / Tasks | Resources Needed | National Curriculum Reference | Summative Quiz Questions |
|---|--|---|---|--|--|
| Gathering and recording data in a variety of ways to help in answering questions. | saliva, salivary glands, taste buds, digest, bitter | Juicy Jelly's! Using the blindfold can you identify the various flavours of sweets? | Blindfold Taste Test Sweets in variety of flavours (jelly beans are good) Blindfold | Describe the basic functions of the main parts of the digestive system in humans. | True or false: Digestion begins before you even put the food in your mouth. Can you sort these things into the order that they happen when you eat an apple? Complete the statement: When you take a bite of the apple, your {{tongue}} tastes the sweetness and tells your brain, "Mmm, here's something good and sweet". Then your {{brain}} sends an order to the parts of the mouth called the {{salivary glands}}, "Get to work!" Which of these parts of the body are involved in digestion and which aren't? Which of these statements about a human's sense of taste are true? |
| Group and classifying things, conducting a comparative and fair test | incisors, canines, chew, molars, dentist | Design an experiment that explores how different substances stain the surface of our teeth. | Egg Staining Experiment 4 beakers or cups, 4 different substances such as: Cola, coffee, blackcurrant juice, water, 4 eggs with shells, Toothbrushes / scrubbing brush, Toothpaste (optional), Cups of water for rinsing, Spoons to remove egg from cups, Kitchen towels | Identify the different teeth in humans and their simple functions. | Your front {{eight}} teeth cut, munch and crunch the food into smaller pieces. Your front eight teeth, four on the top and four on the bottom, are called your {{incisors}}. To incise means to {{cut}}. True or false: You only ever bite off pieces of food that are small enough to swallow whole. Why are your four pointy teeth at the front of your mouth called canines? Which of these are real names for human teeth? Which of these foods would do the most damage to your teeth? Which would do the least amount of damage? |
| Setting up practical enquiries | small intestine, large intestine, stomach, appendix, nutrient | Use craft materials to make a model of the digestive system! Get creative! | Craft Materials Recycled Materials i.e. cardboard, balloons, pipe cleaners, toilet roll tubes, straws, rubber bands etc. | Describe the basic functions of the main parts of the digestive system in humans Animals, including humans (non-statutory) - be introduced to the main body parts associated with the digestive system, for example: mouth, tongue, teeth, oesophagus, stomach, and small and large intestine. | An intestines quiz: this might be longer than you think. True or false: You produce between one and three pints of saliva per day. The stomach is like a small cement mixer - as it stirs up the food, it adds {{liquids and chemicals}} to break your food down into digestible pieces. If you have eaten a hard chunk of an apple, your stomach breaks it down into a mushy substance. True or false: Your small intestine is eight meters long. If held up vertically then it would be taller than four fully grown men. Once your food leaves your stomach, it enters the small intestine. What happens here? Can you put all of these events in order to show the journey that food takes through the human body? |
| Asking relevant questions | food pyramid, natural sugar, dairy product, meat, fruit and vegetables | Create your own food pyramid which shows your diet | <i>Food Audit - Draw Your Pyramid, Handout(s) - Food Pyramid, Pen,, Paper / Mini Whiteboard, Make a Healthy Pizza, Recipe makes one pizza, 375g (13 oz) plain flour, 1 teaspoon of salt, 1 tablespoon caster sugar, 7g (1/4oz) dried active, baking yeast, 2 tablespoons olive oil, 225ml (8oz) warm water, Pizza toppings of your choice, Baking tray, Rolling pin, Handout - for recipe</i> | Identify that animals, including humans, need the right type and amount of nutrition, and that they cannot make their own food, they get nutrition from what they eat. | In the food pyramid for humans, which is the biggest section - the section you should take most of your diet from? True or false: Eating too many foods that contain a lot of fat could damage your heart. These pictures show foods that are in two different food groups: carbohydrates and dairy. But can you tell which of these foods goes into each group? Can you put these food groups in the correct order for the food pyramid? Which one goes at the top? Work your way down from there. Which of these foods are a source of protein? |
| Asking relevant questions. | vitamin A, vitamin B, vitamin C, vitamin D, mineral | Help people's health and wellbeing by giving them advice about the vitamins and minerals in food. | <i>Analysing Food Packaging</i> Food packets brought from home. Either complete, or just the cut-out ingredients lists (don't forget to label these lists so you know what food they are from). <i>Mission to Write - Ask Your Pharmacist Handout</i> | Identify that animals, including humans, need the right type and amount of nutrition, and that they cannot make their own food, they get nutrition from what they eat. | True or false: Vitamin A helps keep skin, tissue and eyes healthy. What does vitamin C do? There are two correct answers. Which of these things are a good source of vitamin D? Meat, green leafy vegetables, whole grain cereals, raisins, and dried beans are all good sources of what? Have you ever heard people say that eating carrots will help you see in the dark? Why do you think that people say this? |
| Identifying differences, similarities or changes related to simple scientific ideas and processes | producer, consumer, decomposer, wheat, soda bread | Investigate three different habitats, and make a food chain pyramid to show the producers, herbivores and carnivores. | <i>Food Chain Pyramid</i> Handout Pens/pencils Scissors Glue | Construct and interpret a variety of food chains, identifying producers, predators and prey | The bright colours on a ladybird's back are to advertise it to predators and let them know that it is safe to eat. Which of these groups of living things does a pond's cycle of nature depend on? Select three. Which of these are the producers in a pond environment and which are the consumers? Can you put these creatures in the right order for a food chain? The energy will travel from the bottom to the top. Complete the statement: Plants use {{nutrients}} to produce their own {{food}}. This is why they are called {{producers}}. So, like a circle, this cycle of nature goes on and on. |



Year 4 Living Things and their Habitats – Nature and the Environment



Know about the balance of nature



Describe ecosystems and how they are affected by changes in the environment



Understand human impact on the environment



Explore air pollution

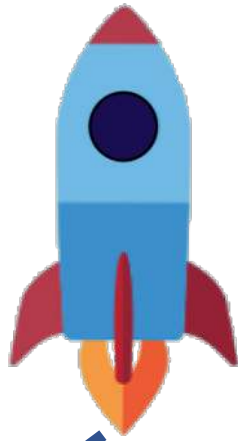


Understand water pollution



Explore methods that can be used to conserve water

| Scientific Enquiry Covered | Rocket Words Covered | Name of Task / Tasks | Resources Needed | National Curriculum Reference | Summative Quiz Questions |
|--|---|---|---|---|--|
| Making systemic and careful observations and recording findings using diagrams or keys | habitat, ecology, heron, bacteria, interdependent | Analysing data. Use your handout to plot the data onto your graph. | <i>Interdependence Study</i> Handout, Pen / pencil / colouring pencils, <i>Build a Bug Habitat</i> , Crisp tubes Masking tape, Paint, Ribbon, Scissors, Paintbrush Bark, leaves, sticks, straw, hay, cardboard, etc. | Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment and identify how the habitat changes throughout the year. | What is the study of how things interact and survive together in environments called? Complete the statement: Remember, when a fish dies and sinks to the bottom of the pond, it creates {{nutrients}} for the plants and bushes at the water's edge to grow again. How? When living things rely on one another for {{survival}} is we say they are {{interdependent}}. What might happen if, as a result of good weather, there is a very good year for the growth of seeds and other crops? Which of these creatures would you expect to predators and which ones do you think are most likely to be prey? True or false: Scientists sometimes call environments where creatures rely on each other for survival 'the circle of life.' |
| Observing changes over time | wetland, ecology, interdependent, ecosystem, environment | Explore how ecosystems are interdependent. | Handout | Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment and explore examples of human impact (both positive and negative) on environments. | Which of these definitions describe an ecosystem? Complete the statement: A wetland area is an example of an {{ecosystem}} - the river and pond, the stream flowing into it and the woodland nearby. All the creatures are {{interdependent}}. Not all of the creatures survive - but their {{species}} will. Which of these images show a diverse ecosystem and which images show an ecosystem which is not very diverse? Which of these things might suggest that an ecosystem is healthy? Select three. If you took one species out of an ecosystem, it would have no impact on the other creatures in the same ecosystem. |
| Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar, charts and tables | air pollution, climate change, water pollution, single use plastic, deforestation | Using secondary sources of information research a man-made disaster that seriously impacted the environment | Library books / the internet <i>Handout</i> | Recognise that environments can change and that this can sometimes pose dangers to living things and explore examples of human impact (both positive and negative) on environments. | What impact did reintroducing wolves to the Yellowstone National Park have? Which of these statements is true? Choose five. True or false: Humans never damage the environment or have a negative effect on wildlife. Have another look at the expert film on slide 15. What steps can humans take to try to have a positive impact on the environment? Choose three. Why had wolves disappeared from Yellowstone National Park 70 years before they were reintroduced in 1995? Complete the statement: The {{ecosystem}} of the Yellowstone National Park had been severely changed by the {{elk}} who had greatly increased in number because there were no {{wolves}} or predators to kill them. |
| Setting up simple practical enquiries, comparative and fair tests | climate change, pollute, greenhouse gases, emission, smog | Investigating air pollution levels. | Index cards Petroleum jelly Sticky and masking tape Cotton wool Scissors Hole punch <i>Handout</i> | Recognise that environments can change and that these changes can sometimes pose dangers to living things and explore examples of human impact (both positive and negative) on environments. | Which of these is the correct definition for the word 'pollute'? Which of these images show air pollution happening and which don't? True or false: The word 'smog' is a mix of the words 'smell' and 'dog'. During the 1950s, how many people died in London as result of smog? Complete the statement: Factories can also {{pollute}} the air with their {{smoke and emissions}}. There are {{no laws}} to regulate pollution from factories in some parts of the world. |
| Gathering, recording, classifying and presenting data in a variety of ways to help answer questions | chemical, contaminate, conserve, water treatment plant, sewage | Research and create a report on disasters, such as oil spills, and how they can affect the environment. | <i>Handout</i> Research Material | Recognise that environments can change and that these changes can sometimes pose dangers to living things and explore examples of human impact (both positive and negative) on environments. | True or false: Some of your drinking water is taken from lakes and rivers. How is water filtered in cities before it is pumped through to houses for drinking water? Which of these images show water being polluted and which don't? Complete the statement: If water {{evaporates}} into polluted air, the water that comes down as rain, and flows into rivers and lakes, can also become {{polluted}} by the air. That's another reason why it's not safe to drink water straight from {{rivers and lakes}}. Which of these statements are true? |
| Gather and record information to suggest improvements | water butt, drought, freshwater, pure, conserve | Complete a water audit exercise then work out how you can save water | Paper Pencils Pens <i>Handout</i> | Recognise that environments can change and that these changes can sometimes pose dangers to living things and explore examples of human impact (both positive and negative) on environments. | True or false: Even if you use less water in your house, you and/or your parents won't save any extra money. Complete the statement: It is unbelievable that {{oceans and lakes and streams}} that contain beautiful {{wildlife}} and are home to so many species, are being used as dumping grounds for our {{waste}}. An example of this is the Great Pacific Garbage Patch. Which of these methods could be used to conserve water? Which of these images show people conserving water and which show people wasting water? |



Year 4 Classifying Living Things and their Habitats



Understand habitats



Know how scientists classify animals



Understand the difference between vertebrate and invertebrate



Know about cold-blooded amphibians and reptiles

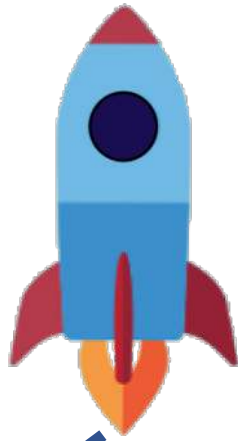


Know about warm-blooded birds and mammals



Understand how fish are different from amphibians and reptiles

| Scientific Enquiry Covered | Rocket Words Covered | Name of Task / Tasks | Resources Needed | National Curriculum Reference | Summative Quiz Questions |
|---|--|---|--|--|--|
| Making systematic and careful observations and recording findings using diagrams or keys | pond dipping, sample, sediment, water lily, newt | Asking relevant questions and using different types of scientific enquiries to answer them. Create your own imaginary creature. | Create a <i>Creature Factsheet</i> Research tools (books, internet) , Paper, Pencils Colouring pens, Handout <i>Pond Dipping</i> , Collecting pots, Pond dipping nets, Beakers Plastic spoons, Plastic trays Gloves, Waterproof boots | Explore and use classification keys to help find, identify and name a variety of living things in their local and wider environment and raise and answer questions based on their observations of animals and what they have found out about other animals that they have researched | What is a habitat? What do habitats provide? Which of the following are types of habitat? Ponds are full of different organisms. Some plants grow along the edge of the pond and other grow (underwater). Animals like (frogs) and (dragonflies) can also be found living in pond habitats. Which habitats support the greatest diversity of life? Order from most diverse to least. |
| Making systematic and careful observations. | classify, vertebrate, invertebrate, species, characteristics | Classifying into groups. Look at varied animals and decide which groups you can classify them into. | Grouping and Classifying Venn Diagram Hula Hoops (optional) Images of / model or toy animals Handout | Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. | True or false: All insects have six legs. Which of these characteristics are possessed by ALL birds? Complete the statement: The commonality of all mammals is that they have (hair), secrete (milk) to feed their babies and are vertebrates. They are also (warm blooded). In warm-blooded animals, blood warms up or cools down depending on the time of day (being linked with the Sun's movement). Which of these creatures are mammals and which of them are birds? |
| Identifying differences, similarities or changes related to simple scientific ideas and processes | vertebrate, invertebrate, amphibian, exoskeleton, skeleton | Go on an animal-finding expedition outside or cut out pictures of different animals to sort and classify them. | Classifying Animals Camera (optional) magazines / newspapers scissors glue large sheets of paper | Recognise that living things can be grouped in a variety of ways. | Which of these animals are vertebrates and which are invertebrates? True or false: Being a vertebrate means having a backbone. Can you put these vertebrates in size order, with the largest at the top and the smallest at the bottom. Some animals don't have a (spine), or even a skeleton, but they have an (exoskeleton) which protects their bodies. All amphibians are (vertebrates). What is the largest land snail (which is an invertebrate) in the world? |
| Grouping and classifying. | cold-blooded, gills, oxygen, scales, reptile | Model your own cold-blooded reptile using modelling clay, then investigate how long it takes for your clay model to change its body temperature based on its surrounding. | Clay Reptiles, Modelling clay (not the self-hardening type) Building a Habitat for Amphibian Shoebox or something similar, Card Straws, Pebbles, Paint Fact Sheet, Reference books and the internet, <i>Handout</i> | Recognise that living things can be grouped in a variety of ways and put vertebrate animals into groups, for example: fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects. | Which of these creatures are cold-blooded and which are not? True or false: There are under 600 species of reptiles on the planet. Where do amphibians live? Complete the mission: The word (amphibian) means 'living in two places'. When they are young, amphibians have (gills) to take (oxygen) from the water. Then they grow up and most develop (lungs) that allow them to take oxygen from the air. Which of these characteristics do ALL reptiles have? |
| Asking relevant questions and using different types of scientific enquiries to answer them. | bird, mammal, warm-blooded, migration, hibernation | Create a wildlife spotting guide for your local area. | Wildlife Spotter Handout - Wildlife Spotter Pen Research - books / internet outside space to explore | Recognise that environments can change and that this can sometimes pose dangers to living things. | Which of these characteristics do ALL mammals have? Which of these creatures are mammals and which aren't? True or false: There are two species of squirrel. The red one and the grey one. Complete the statement: Whales and dolphins breathe air using (lungs), not gills. They need to come to the surface to breathe air. Whales and dolphins communicate using (high pitched sounds) and are very (intelligent) creatures. Which of these creatures are rodents? |
| Making systematic and careful observations and recording findings using diagrams and keys | fish, amphibian, reptile, cold-blooded, shark | Create your own magnetic fish game to help you learn about different types of fish. | Magnetic Fish Game Library books, internet Handout Coloured Pens/pencils Paperclips Magnets | Explore and use classification keys to help them group, identify and name a variety of living things in their local and wider environment and put vertebrate animals into groups, for example: fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects. | True or false: A cold-blooded creature's body temperature goes up and down depending on whether it is hot or cold around them. Which of these classes have the largest number of species in their class? Which of these are amphibians and which are fish? As a warm blooded creature, your body temperature stays almost exactly the same almost all of the time. Do you know what temperature that is? Complete the statement: Fish are (cold blooded), live in water, use gills and not lungs to breathe, and take (oxygen) from the water. Most fish are covered in (scales) and hatch from (eggs) which are laid by the female outside of her body. |




Year 4 Sound




Describe how sound travels



Explain what causes sound



Compare the speed of sound and the speed of light



Compare sounds in solids, liquids and gases

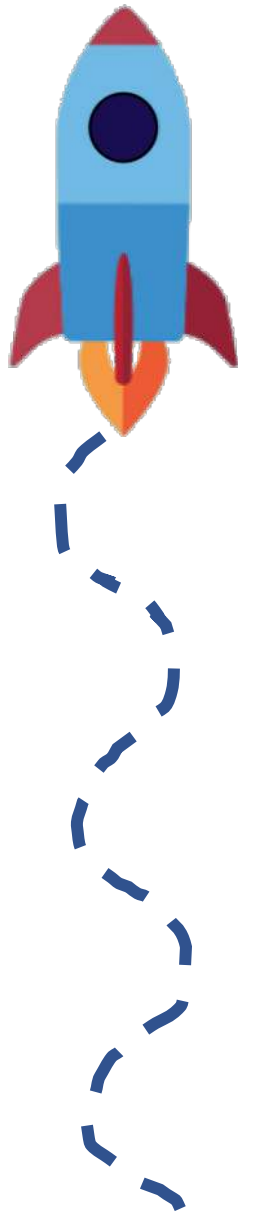


Describe different sounds



Explain how to protect your ears

| Scientific Enquiry Covered | Rocket Words Covered | Name of Task / Tasks | Resources Needed | National Curriculum Reference | Summative Quiz Questions |
|---|--|---|---|--|---|
| Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including data loggers. | sound wave, echo, pinna, diffraction, fade | Setting up simple practical enquiries, comparative and fair tests. Sound muffler challenge! | Catching sound A2 paper (to make a large paper cone) tape <i>Handout</i> | Recognise that sounds get fainter as the distance from the source increases. | Place the items into the correct bucket, those which are used to send sound and those that receive it. The speed of sounds. Sort these in order of the speed with which sound travels through them, starting with the fastest. Sound waves spread out as they travel away from the source. What is this known as? In which of the following can sound travel? What shape is useful when trying to capture sounds? (hint: think of our ears and owls faces) |
| Identifying differences, similarities or changes related to simple scientific ideas and processes; Setting up simple practical enquiries, comparative and fair tests | loudspeaker, voice box, sound, source, vibration | Exploring sound vibration! | Cup and String Telephone Plastic cups Cocktail stick String / wool ~ 4m <i>Handout</i> | Identify how sounds are made, associating some of them with something vibrating. | Sound is created by waves moving backwards and forwards. Put these things in the order that they happen when you hear something make a sound. True or false: You cannot hum while holding your nose. Why might someone not be able to hear something when it makes a sound? Can you sort these images into things that block sound and things don't. |
| Use knowledge to explain different phenomena | supersonic, Concorde, speed of sound, thunder, lightning | Explore light & sound phenomena | Light vs Sound <i>Handout</i> | Find patterns between the pitch of a sound and features of the object that produced it. | Which travels the fastest? Flying on Concorde, it was possible to arrive in New York at an earlier time than you left London. A quiet sound travels a {{shorter}} distance, but a loud sound can travel {{much further}}. This is because a sound with a {{higher intensity}} will travel a long way compared to a quiet sound. How fast does light travel? You are standing in a field. On the other side of the field, your friend kicks a ball. In chronological order, what do you see an hear? |
| Using straightforward evidence to answer questions or to support their findings. | medium, vacuum, transmit, clarity, particles | Observe sounds in solids, liquids and gases. | <i>Handout</i> , The Sugar and the Speaker, sugar grains, cling film, bowl, speaker, Hanging From Your Ears, String, wire coat hanger, Tuning Fork in Water, bowl of water, tuning fork, bung, Rocks Underwater, tank of water, two rocks 2l plastic bottle (bottom cut off), Balloon Chatting, inflated balloon, Listening by the Fan electric fan | Recognise that vibrations from sounds travel through a medium to the ear. | True or false: Sound moves quicker through air than water. Can you sort these images into examples that prove that light waves move quicker than sound waves. Which of these places would you expect to hear echos? See if you can sort them into places that you would hear echos and places that you wouldn't. If you moved further away from a source that makes sound and light, what do you think would happen to the length of time between the moment that you saw the light and the moment that you heard the sound? Even though sound travels faster through liquids, why do you think that it is hard to hear clearly underwater? |
| Reporting on findings from enquiries, including oral and written explanation | low-pitched, high-pitched, volume, loud, quiet | Create a sound museum | Sound Museum <i>Handout</i> objects from around the room | Find patterns between pitch of sound and features of the object that produced it. | What does pitch mean? If you place and hold a ruler half-way on a table, pull it down and let it go, it will make a sound. If you move the ruler slightly further onto the table while it is still vibrating, what do you think will happen to the pitch of the sound? Which of these statements are true? The pitch of a sound is controlled by the {{speed}} of its {{vibrations}}. Which of the following would make high-pitched sounds, and which would make low-pitched sounds? |
| Using results to draw simple conclusions. | ear defence, baffling, absorb, muffled, sensitivity | Which materials are good at insulating sounds? | <i>Handout</i> , A simple circuit containing a battery, a buzzer & a switch. Samples of materials including; sponge, paper, corrugated card, cloth, foil etc. These should be cut to the same size and be able to cover the top and sides of the of the buzzer. | Find patterns between volume of a sound and the strength of the vibrations that produced it. | Which of these materials do you think would best insulate against sound? Pick three. True or false: Bones and muscles transmit sound. True or false: Different materials transmit sounds better than others. Complete the statement: Unless you wrap your {{whole body}} in many thicknesses of insulating material, some sound will always get through, as bones and muscles {{transmit sound}}. Different materials transmit {{frequencies}} better than others. Which of the places do you think that it would be a good idea to wear hearing protection? |



Year 4 Electricity



Identify when a lamp will light in a simple series circuit



Explore how electricity is transported



Understand the difference between a series and parallel circuit



Explain how to recognise electrical conductors and insulators

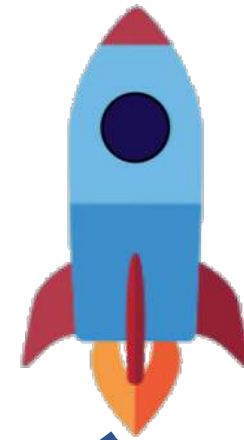


Describe the basic parts of a circuit



Know how to work safely with electricity

| Scientific Enquiry Covered | Rocket Words Covered | Name of Task / Tasks | Resources Needed | National Curriculum Reference | Summative Quiz Questions |
|--|--|--|---|--|---|
| Identifying differences and similarities or changes related to scientific ideas and processes. | open circuit, closed circuit, switch, component, circuit diagram | Build a circuit and draw a diagram of it. | Build a Series Circuit with a Bulb, 6 volt batteries, Switch junctions, Bulb junctions Alligator clips, Buzzers, Torch Investigation, Torches, Pencils, Paper, <i>Handout</i> | Construct a simple series electric circuit, identifying and naming the basic parts, including cells wires, bulbs, switches, and bulbs. | If one light goes out in a series circuit then all of the lights in that circuit will go out. Complete the statement: A series circuit is one continuous {{loop}}. The electricity flows directly from the {{power source}} to the load. There may be a switch included in the circuit in order to {{stop}} the flow of electricity when it is flicked. What might be some of the reasons for loads (such as light bulbs) not working in a series circuit? Select three. Put all of these components in the correct order so that the circuit would work. What is the purpose of a resistor? |
| Identifying differences, similarities or changes related to simple scientific ideas and processes. | national grid, switch, wind turbine, electrons, cable | Make your own doorbell. | Battery Electrical Wires / Crocodile clips Buzzer Paper Clips Paper | Identify common appliances that run on electricity | True or false: A switch can turn a circuit on or off. Which type of particle is electricity made by? Which of these ways make electricity? Which of these ways of generating electricity do you think are sustainable/renewable? From the energy source, electricity is moved into our homes, schools, offices through {{wires}}, and cables. Electricity can also be {{stored}} before being sent to us: in {{batteries}} or cells. |
| Identifying differences and similarities or changes related to scientific ideas and processes. | parallel circuit, series circuit, current, continuous, represent | Design and make a light spinner card and test it out with series and parallel circuits. | Handout Pen Paper / Board to record on LED light / bulb batteries wires / clips motor | Construct a simple series electric circuit, identifying and naming the basic parts, including cells wires, bulbs, switches and bulbs. This lessons goes beyond the national curriculum which only asks you to explore series circuits. | If one of the bulbs in a parallel circuit goes out then all of the bulbs will go out. Complete the statement: A parallel circuit has different {{components}} connected through different paths, or branches, before returning to a {{common path}} and, finally, back to the {{power source}} Can you sort these images depending on whether they run on a parallel circuit or a series circuit? True or false: Adding additional paths (branches) will make the lights already in the circuit dimmer. Select the statements that are true about the benefits of a parallel circuit over a series circuit. Two are correct, two are incorrect. |
| Identifying differences and similarities or changes related to scientific ideas and processes. | conductor, insulator, resistance, electrical shock, short circuit | Which materials are conductors and which ones are insulators. Predict and then test. | Insulators and Conductors Challenge, Four pieces of coated electrical wire, D battery, Small light bulb, paperclips, toothpick, aluminium foil, drink can, copper coin, used match, rubber band, galvanised screws, eraser, etc. Bulb holder, D battery holder, Batteries, Card, Bulb, Clothes pegs | Recognise some common conductors and insulators and associate metals with being good conductors. | Most metals are good conductors. Materials that do not let electricity pass through them are call {{insulators}}. Some examples of these are plastic, wood, glass and {{rubber}}. Materials that do conduct electricity are called {{conductors}}. Some examples of these are {{copper}}, silicon, zinc and sea water. Sort these items into ones that conduct electricity and ones that don't. In which of these scenarios is there a danger of electrocution? Which one of these statements is true? |
| Identifying differences and similarities or changes related to scientific ideas and processes. | electric circuit, wire, electrical appliance, bulb, battery | Create your own electrical circuit, powered by a lemon! | Fruit Power Battery Lemons, Pennies / Copper Coins, Zinc-galvanised nails, Sets of alligator clips. LED lights* Kitchen knife, <i>Handout</i> , <i>However for the best results use low voltage LEDs, anything between 1.5V to 2.25V should work.</i> | Identify common appliances which run on electricity. Construct a simple series electric circuit, identifying and naming the basic parts, including cells wires, bulbs, switches, and buzzers. | Electricity flows from the power source, through the {{switch}} when it is turned on, and through the wires, which {{conduct}} the electricity. Once the electricity reaches the bulb, it travels through the filament, which makes the bulb {{light}} up. Protons flow around an electrical circuit. Which of these items use electricity and which don't? When electrical energy reaches the filament in the bulb what is converted to? What is the name of the route that electricity flows through? |
| Identifying differences and similarities or changes related to scientific ideas and processes. | electrician, electric shock, precaution, repair, electrical socket | Create your own health and safety booklet which explains how to use electrical appliances correctly. | Safety Poster Challenge Paper, Paints, Computers Printer, <i>Handout</i> Magazines, Health & Safety Booklet, Paper, Pens | Pupils should be taught about precautions for working safely with electricity. | Which of the things listed below would make working with electricity more dangerous? Which of the things listed below are safe ways to use electricity? Have a look at the expert video on slide 20. Why do you think that holding the grass against the electric fence does not give either of them a big electric shock? Why would it be dangerous to swim in the sea during a thunderstorm? Which of these things would make working with electricity safer and which of them would not make it any safer? |



Year 4 States of Matter



Compare and group solids, liquids and gases



Investigate the effect temperature has on changing state



Understand diluting and dissolving



Understand evaporation and condensation



Understand the water cycle



Describe freezing and melting

| Scientific Enquiry Covered | Rocket Words Covered | Name of Task / Tasks | Resources Needed | National Curriculum Reference | Summative Quiz Questions |
|---|---|--|---|--|---|
| Identifying differences, similarities or changes related to simple scientific ideas and processes | state of matter, particle, volume, matter, bond | Create your own model which shows how water exists in three different states of matter. | Matter Models Marbles Plastic Container with lid | Compare and group materials together, according to whether they are solids, liquids or gases | Which three states does water exist in? What happens when you boil water? Which of these pictures shows water in liquid form and which show it in a different form? At what temperature does water freeze and become ice? Sort these examples of water so that water at the highest temperature is at the top and water at the lowest temperature is at the bottom. |
| Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers | temperature, degrees Celsius, melting point, boiling point, thermometer | Investigate how quickly a material dries at different temperatures | Drying Investigation Fabric sample squares Water Different temperature rooms / spaces. <i>Handout</i> | 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). Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. States of matter (non-statutory) - observe and record evaporation over a period of time, for example, a puddle in the playground or washing on a line, and investigate the effect of temperature on washing drying | When something is hot or cold we measure its {{temperature}} and this can be done using a {{thermometer}}. Temperature is most often measured in {{degrees Celsius}} but can also be measured in Fahrenheit. Can you put these events in order to explain what happens when temperature affects the state of matter? Which of these pictures show places where clothes would dry quickly and which pictures show places where clothes would not dry very quickly? Which of these things could you put wet clothes in/on in order to dry them more quickly? At what temperature does water change into a gas? |
| Identifying difference, similarities or changes related to simple scientific ideas and processes | dissolve, dilute, soluble, solvent, solute | Setting up simple practical enquiries, comparative and fair tests. Explore how to make the best bubble mixture by diluting substances. | Make a Bubble Wand Water Washing Up Liquid Measuring Cylinder Beaker Bubble Wand (we used the end of a bottle) | Compare and group materials together, according to whether they are solids, liquids or gases. | We call things that dissolve in water solutes. Which of these things dissolve in water and which do not dissolve in water? You cannot go on adding sugar to a water solution forever. A {{solvent}} (in this case water) can only dissolve a certain amount of {{solute}} (in this case sugar). When you cannot dissolve any more sugar in the water, we say that it has become a {{saturated solution}}. What happens when you put water and oil in a bottle and shake it? What happens when you put sugar and water into a bottle and shake it? |
| Reporting on findings from enquiries, including oral and written explanations, displays, or presentations of results and conclusions. | evaporation, condensation, absorb, heat, water vapour | Set up an experiment to see the rates of evaporation of different substances. | The Evaporation Challenge Jam jars / petri dishes Water, oil, vinegar washing up liquid Permanent Markers Paper Towels, Hot water Sealable plastic bags | Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. | The particles in a solid are closely arranged and bonded to each other. When a gas is {{cooled}} and changes state to a liquid, the process is called {{condensation}}. When a liquid is {{heated}} and turns into the state of a gas, this is called {{evaporation}}. What happens to water that does not evaporate? Which of these statements are true? (choose only one) Which of these images shows evaporation and which show condensation? |
| Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. | water cycle, precipitation, transpiration, surface run off, groundwater | Water cycle collage. | Water Cycle Display Craft Materials | Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. | Geographical water cycle facts show that Planet Earth is about 70% {{water}}, 97% of which is {{salt water}} and therefore not safe for humans to consume or use in farming to grow crops. Of the 3% that remains, 2% is actively stored in {{glaciers or ice caps}}. Water that falls back to Earth and infiltrates the ground is called dormant crystals. How much water on Earth takes each of these forms? Put the largest at the top and the smallest at the bottom. Shuffles Automatically: What is the journey called that a drop of water takes as it evaporates from the ocean, forms clouds, changes into rain, and then falls back to Earth? Which of these words describes water falling from clouds back to Earth? (choose all that apply) |
| To describe and explain findings from an evaporation investigation, and grouping and classifying a variety of different materials. | melting, freezing, sublimation, deposition, reversible | What temperature does wax freeze at? | Wax shavings (you could also use chocolate) Test tube 2 beakers Hot water Thermometer Stopwatch <i>Handout</i> | Observe that some materials change state when they are heated or cooled. | When a liquid changes to a solid, it is called freezing. Melting is the process of a solid changing to a Select... when Select... is applied. The opposite of this is Select... , when a liquid turns to a solid due to freezing temperatures. When water and other materials change state, they can often be Select... by applying or removing heat. Place these statements in order for when ice turns to steam and reverses again. Which of these describes the process of melting? Which of these would happen to an ice cream if you left it in the sun? |

