Bounds Green School Science Unit

MATERIALS, States of Matter – Autumn 1 YEAR

Year 1

- 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.

Year 2

- 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.

Year 3

- 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.

Year 4

- Compare and group materials together, according to whether they are solids, liquids or gases.
- 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.

degree Celsius
interval
model
scale
variable
volume
boil
boiling point
bubble
carbon dioxide
change of state
cloud
compress
Condense
condensation
Evaporate
evaporation
expand
freeze
freezing point
gas

granular
heat-sensitive
helium
ice
liquid
melt
melting point
oxygen
powder
rain
snow
sold
solidify
steam
viscous
water vapour

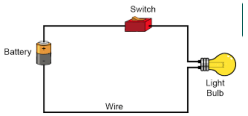
Year 5

Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. • Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. • Demonstrate that dissolving, mixing and changes of state are reversible changes. • Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.

brittle
ductile
fragile
impermeable
malleable
permeable
thermal conductor
thermal insulator
viscosity
compost
decompose
durable
elasticity
electrical conductor
electrical insulator
soluble
insoluble
magnetic / non-magnetic
reversible
irreversible

Bounds Green School

ELECTRICITY (circuits), Autumn 2, YEAR 4



<table>
<tr><th colspan="2">Year 4</th><th colspan="2">Year 6</th></tr>
<tr><td colspan="2">• 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 conductors.</td><td colspan="2">• Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.
• Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.
• Use recognised symbols when representing a simple circuit in a diagram</td></tr>
<tr><td>appliance
complete
device
flow
function
manual
plug
socket
wire
circuit
battery
bulb
buzzer
cell</td><td>closed circuit
connection points
electrical appliance
electrical component
electrical conductor
electrical insulator
electricity
mains
motor
open circuit
switch</td><td>fan
flow
propeller

standard symbol
voltage
volts

complete
flow
wire
circuit
battery
bulb
buzzer
cell</td><td>closed circuit
connection points
electrical appliance
electrical component
electrical conductor
electrical insulator
electricity
mains
motor
open circuit
lux
switch</td></tr>
</table>

Living Things & Their Habitats (Human Impact) – Spring 1 YEAR 4

Year 2

- Explore and compare the differences 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 for 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 microhabitats.
- 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.
- Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals including humans)

Year 4

- Recognise that environments can change and that this can sometimes pose dangers to living things.

compare
litter
evaluate
variable
biodegradable
compost
decompose
environment
filter
fungi
micro-organism

organism
pollution
rank
decay
decomposer
food chain

Year 5

- Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.
- Describe the life process of reproduction in some plants and animals.

dissect
anther
asexual
breeding
embryo
filament
female
fertilisation
gestation
larva
male
mate
metamorphosis
ovary
ovule
propagation
pupa
reproduction
seed

dispersal
stamen
style
thorax
carpel
lifecycle
organism
pollen
pollination
Pollinator

Year 6

- Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals.
- Give reasons for classifying plants and animals based on specific characteristics.

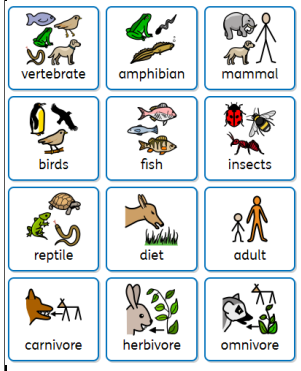
Anthropod
Cone
Conifer
Enchinodermata
Fern
Flatowrm
Monera
Moss
Mould
Needle
Protista
Spore
Taxonomy
Annelid
Arachnid
Carpel
Crustacean
Fungi

Mollusc
myriapod
Organism
Reproduction
Species
Stamen
Cold-blooded
Warm-blooded

YEAR 4, ANIMALS INCLUDING HUMANS (digestive system) – Spring 2

Year 1

- 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.

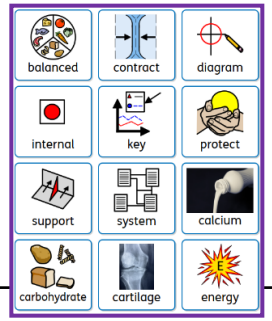


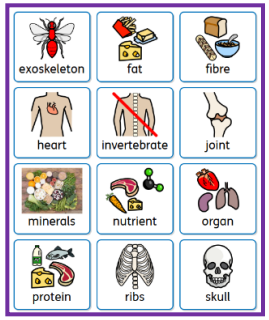
Year 2

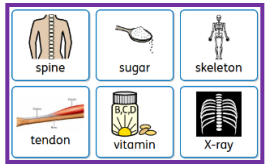
- Notice that animals, including humans, have offspring which grow into adults.
- Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).
- Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.

Year 3

- Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.
- Identify that humans and some other animals have skeletons and muscles for support, protection and movement.







Year 4/5/6

Y4

- Describe the simple functions of the basic parts of the digestive system in humans.
- Identify the different types of teeth in humans and their simple functions.
- Construct and interpret a variety of food chains, identifying producers, predators and prey.

contract	food web	small intestine
flow	incisor	stomach
function	jaw	vomit
grind	large intestine	
anus	mechanical	
canine	milk teeth	
chemicals	molar	
constipation	oesophagus	
decompose	predator	
diarrhoea	prey	
digestion	rectum	
extinct	saliva	

Y5

- Describe the changes as humans develop to old age. • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. (Y5 - Living things and their habitats)
- Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats)

Y6

- Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. • Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. • Describe the ways in which nutrients and water are transported within animals, including humans. • Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. (Y6 - Living things and their habitats) • Give reasons for classifying plants and animals based on specific characteristics. (Y6 - Living things and their habitats)

Sound – Summer 1 YEAR 4

Prior learning:
- that we hear sounds with our ears (Year 1 Biology – Animals, including humans)
- to classify materials as solids, liquids or gases (Year 4 Chemistry – States of matter).

<table>
<tr><th colspan="2">Year 4</th><th colspan="2">KS3</th></tr>
<tr><td colspan="2">• 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 increases.</td><td colspan="2">• Waves on water as undulations which travel through water with transverse motion; these waves can be reflected, and add or cancel – superposition. • Frequencies of sound waves, measured in Hertz (Hz); echoes, reflection and absorption of sound. • Sound needs a medium to travel, the speed of sound in air, in water, in solids. • Sound produced by vibrations of objects, in loud speakers, detected by their effects on microphone diaphragm and the ear drum; sound waves are longitudinal. • Auditory range of humans and animals. • Pressure waves transferring energy; use for cleaning and physiotherapy by ultra-sound. • Waves transferring information for conversion to electrical signals by microphone.</td></tr>
<tr><td>sound
sound source
noise
vibrate/vibration
travel
solid/liquid/gas
pitch
tune
high/low
volume
loud/quiet
decibel</td><td>fainter
muffle
strength of vibrations
insulation
instrument
percussion
strings
brass
woodwind
tuned instrument
tuning fork</td><td></td><td></td></tr>
</table>

Living Things & Their Habitats (Classification of Plants & Animals) – Summer 2 YEAR 4

Year 2

- Explore and compare the differences 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 for 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 microhabitats.
- 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.
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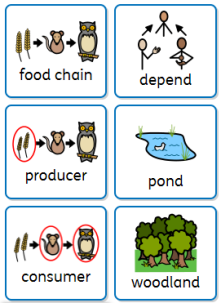

Year 4

- 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.
- Construct and interpret a variety of food chains, identifying producers, predators and prey. (Y4 - Animals, including humans)

characteristic
feature
internal
observable
segment
branching key
annelid
arachnid
cold-blooded
crustacean
flowering plant
mollusc
myriapod
non-flowering plant
organism
warm blooded
amphibian
bird
deciduous
evergreen
exoskeleton
fish
flower
insect
invertebrate
mammal
reptile
skeleton
vertebrate

Year 5

- Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.
- Describe the life process of reproduction in some plants and animals.

dissect
anther
asexual
breeding
embryo
filament
female
fertilisation
gestation
larva
male
mate
metamorphosis
ovary
ovule
propagation
pupa
reproduction
seed dispersal
stamen
style
thorax
carpel
lifecycle
organism
pollen
pollination
pollinator

Year 6

- Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals.
- Give reasons for classifying plants and animals based on specific characteristics.

Anthropod
Cone
Conifer
Enchinodermata
Fern
Flatowrm
Monera
Moss
Mould
Needle
Protista
Spore
Taxonomy
Annelid
Arachnid
Carpel
Crustacean
Fungi
Mollusc
myriapod
Organism
Reproduction
Species
Stamen
Cold-blooded
Warm-blooded