Ridgeway Farm CE Academy – Knowledge Organiser

Topic	Geography – Polar Biomes	Theme	Children	Year Group	4
Key Question	How are Polar Biomes being affected by climate change and what can we do to protect these unique environments for the future?				

What should I already know?

- The seven continents (including Antarctica) and five oceans of the world.
- Where the biomes are located and what the vegetation is like in each biome.
- Examples of some countries around the world and what the climate is like there.
- What plants need to survive.
- How seasonal changes can affect the weather and vegetation.

Key Learning

- ❑ Locate where the polar biomes can be found using maps, globes and atlases. Locate the countries that the arctic tundra can be found in.
- ❑ Describe the climate in the polar biomes and explain why this is the case.
- ❑ Explain why there is a lack of vegetation in the polar biomes.
- ❑ Compare the vegetation in the polar biomes to that of a woodland or forest and explain the similarities and differences.
- ❑ Explain the effect that climate change has on the arctic tundra.
- ❑ Explain what humans can do to help combat the effects of climate change.
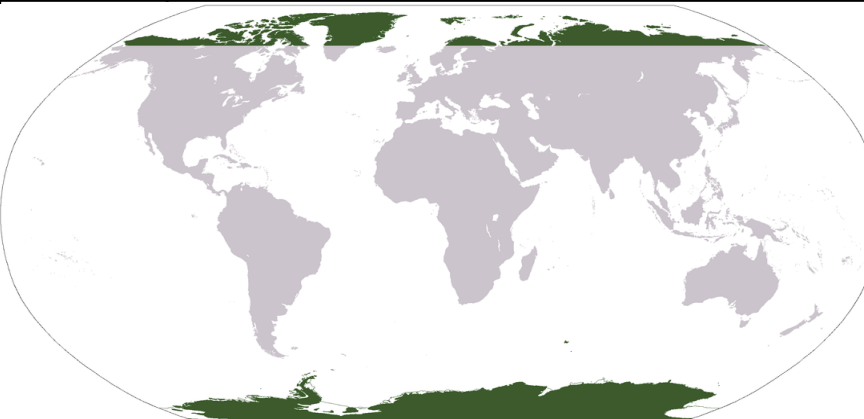
What I will know by the end of the unit

Polar Biomes:
- **Polar biomes** (including the arctic tundra) are areas close to the North and South Pole and have harsh environments. For plants and animals to survive, they must be able to adapt in order to cope with their harsh environment.
- The **tundra** is a large, **barren** region with no trees. The word tundra means "treeless **plain**."
- The **tundra** are the coldest of all biomes.
- The **arctic tundra** is under threat due to **climate change.** Polar ice caps are shrinking and **melting** as a result of increasing **global temperatures,** and this is also causing the **permafrost** to melt.

Permafrost and the **landscape:**
- Below the top soil, the ground is permanently frozen all year round. A thin layer of top soil thaws during summer and plants such as mosses can grow.
- **Permafrost** prevents trees from growing in the **tundra** because trees need to have deep roots and they can't grow in the **frozen** ground.
- **Permafrost** is difficult to build on and this is one of the reasons very few people inhabit the **tundra.**

Climate:
- The **tundra** has two distinct **seasons**: a long winter and a short summer. Being so far north, the tundra has long nights in the winter and long days in the summer.

Key Vocabulary

arctic	The area of the world around the North Pole. It is extremely cold. There is very little light in winter and very little darkness in summer.
barren	Used to describe land that is dry and bare. A barren landscape has very few plants and no trees.
biome	A large natural area of the earth that has similar weather, climates, landscapes, animals and plants.
climate	The general weather conditions that are typical of a place.
climate change	The process of our planet heating up.
continent	A large solid area of land. Earth has seven continents.
environment	All our surroundings. Air, soil, water, plants and animals make up an environment.
global	Something that happens in all parts of the world or affects all parts of the world.
habitat	The place where living things naturally live and grow.
landscape	Everything you can see when you look across an area of land, including; hills, rivers, buildings, trees and plants.
melting	To change from a solid to a liquid state through heat or pressure.
permafrost	A layer of ground beneath the top layer of soil that is frozen all year and only found in the Tundra.
permanent	Something that is permanent lasts forever.
plain	A large area of flat land that has very few trees on it.
polar	The area around the North or South Pole.
seasons	Four different times during the year with different types of weather.
sustainability	Small changes we can make to help look after our planet.
temperature	A measure of how hot or cold something is.
tundra	A flat layer of land where the top layer is frozen. There is hardly any vegetation.
vegetation	Plants, trees and flowers in an area.

Polar Region Locations

North Pole	South Pole
Arctic Circle	Antarctic Circle
Includes parts of Russia, Norway, Sweden, Finland, Canada, Alaska, Greenland and Iceland.	Has no countries and no one living there permanently.

Ridgeway Farm CE Academy – Knowledge Organiser

Topic	Science – Group and classify living things, habitats and deforestation.	Theme	Children	Year Group	4

What should I already know?

- Animals can be grouped into vertebrates and invertebrates.
- Animals can be grouped into carnivores, herbivores and omnivores.
- The names of some common wild and garden plants and deciduous and evergreen trees.
- Examples of habitats (including microhabitats) and the animals and plants that can be found there.

Key Learning

- ❑ Living things can be sorted into groups based on their features.
- ❑ Use classification keys to help group, identify and name a variety of living things in their local and wider environment.
- ❑ Explore the differences between urban and rural habitats and compare this with our local habitat.
- ❑ Habitats can change throughout the year and this can have an effect on the plants and animals that live there.
- ❑ Understand that humans can have positive and negative effects on the environment.
- ❑ Explore how deforestation impacts habitats in our local area and the rest of the world.

Key Vocabulary

amphibian	an animal with a spine that can live on land and in water
biodiversity	the variety of living things in a habitat
bird	an animal with a spine, feathers, wings and a beak
classification key	a way of separating living things using closed questions
deforestation	clearing trees from a woodland or forest habitat so the land can be used by humans
endangered	when a type of living thing is at risk of becoming extinct
exoskeleton	a type of skeleton on the outside of an animal's body that provides support and protection
extinct	when a type of living thing no longer exists
fern	a non-flowering plant with long stems and feather like leaves
fish	an animal with a spine, fins and gills, that lives in water
habitat	an area where animals and plants live
invertebrate	an animal without a spine
mammal	an animal with a spine, fur or hair on its body, and feeds its young on milk
moss	a non-flowering plant that grows in damp, moist conditions
natural resources	materials that humans use that have been removed from the environment
pistil	the female part of a flowering plant
pollination	the transfer of pollen from the male parts to the female parts
reptile	an animal with a spine and dry scales on its body
rewilding	a method of increasing biodiversity by reducing human activity
stamen	the male parts of a flowering plant
sustainable	does not cause long-term damage to the environment
vertebrate	an animal with a spine

What I will know by the end of the unit

How can living things be grouped?	Living things can be grouped according to different criteria (where they live, what type of organism they are, and what features they have). All mammals, birds, fish, amphibians and reptiles are vertebrates. Insects and spiders are invertebrates. Slugs and snails are soft-bodied invertebrates. Non-flowering plants include mosses and ferns. Flowering plants can produce flowers and fruit. Deciduous trees lose their leaves in autumn. Evergreen trees keep their leaves all year round.
What is a classification key?	A classification key is a tool that is used to group living things to help us identify them.
How can habitats change?	• Habitats can change throughout the year and this can have an effect on the plants and animals that live there. Human effects on the environment: • positive effects: nature reserves, ecological parks • negative effects: litter, urban development
What are the impacts of deforestation on the planet?	• Deforestation impacts animals and plants by destroying their habitats and reducing the biodiversity of an area. • When habitats are destroyed, the plants and animals that live there become at risk of becoming endangered or extinct. • Palm oil is used in lots of products. • It can come from sustainable sources which reduces the impact of deforestation.

Is it a flowering plant?
yes — Does it have large, yellow petals? yes / no
no — Does it have feather-like leaves? yes / no
Does the plant have a trunk? yes / no

Is it a mammal?
yes — Does it have antlers? yes / no
no — Does it have scales? yes / no

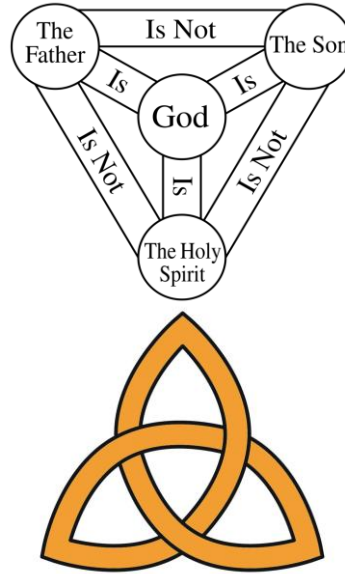| Topic	RE		Theme	Children		Year Group	4

Key Question	What is the 'Trinity' and why is it important for Christians?

What should I already know?

- Christians are followers of God.
- Jesus spread the word of God when he was on Earth.
- Christians believe that God wants people to look after the world he created.
- Gospels tell the life and teaching of Jesus.
- Why and how people pray.

What I will know by the end of the unit.

- The meaning of the Trinity in Christian faith and how Christians describe the Holy Trinity.
- What the Bible says about the baptism of Jesus.
- How the Holy Trinity is described in artwork and poetry.
- How Christians show their belief in God the Trinity in worship and in the way they live.
- How Christians celebrate the Holy Trinity.
- Why the trinity is important to Christians.

Key Knowledge

- Christians believe God is the Trinity: Father, Son, and Holy Spirit. This is called the Holy Trinity.
- The Holy Trinity symbol demonstrates the three parts of God being equal and intertwined, with no beginning or end.
- Christians believe the Father creates; he sends the Son, who saves his people; and the Son sends the Holy Spirit to his followers.
- Christians find that understanding God is challenging; people spend their whole lives learning more and more about God.
- Christians really want to try to understand God better, so try to describe God using symbols, similes, and metaphors in song, stories, poems, and art.
- Christians worship God as Trinity. It is a huge idea to grasp, and Christians have created art to help express this belief.
- Christians believe the Holy Spirit is God's power at work in the world and in their lives today, enabling them to follow Jesus.

Key Vocabulary

Baptism	A ceremony that symbolises a commitment to living a life as a Christian.
Belief	The feeling of being certain that something exists or is true
Bible	The Christian holy book. It is separated into the Old Testament and the New Testament.
Christianity	A religion focussed on the life and teachings of Jesus Christ, who Christians believe to be the Son of God.
Christians	A follower of Christianity.
Gospel	Four books of the Bible found at the start of the New Testament that tell the stories of Jesus' life.
Holy Spirit	The Holy Spirit is the Love between God the Father and God the Son
Holy Trinity	A way of describing God the Father, God the Son and God the Holy Spirit. God is three-in-one.
Incarnation	The earthly form of a god or spirit.
Prayer	A way to communicate with God.
Worship	Showing words, thoughts and actions about how great God is.

God the Father	God the Son	God the Holy Spirit
God the Father is absolute holiness and goodness. Just as an earthly father would care for his children, God the Father cares for all people on Earth.	God the Son is God in human form. This is called incarnation. Part of God became human when Jesus came to Earth.	The Holy Spirit is the part of God that is living inside Christians. It is God's power at work on Earth. Christians believe that the Holy Spirit guides them and reveals God's nature to them.

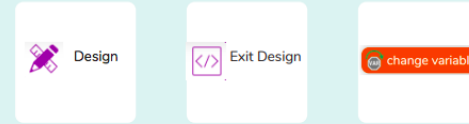| Topic	Computing – Coding	Theme	Children	Year Group	4

Key Learning

- To begin to understand selection in computer programming.
- To understand how an IF statement works.
- To understand how to use co-ordinates in computer programming.
- To understand the 'repeat until' command.
- To understand how an IF/ELSE statement works.
- To understand what a variable is in programming.
- To use a number variable.
- To create a playable game.

Key Resources

purple mash

Tools 2Dos 2Chart Free code gibbon

Key Resources

purple mash

Tools 2Dos 2Chart Free code gibbon

Key Images

Design — Open design mode in 2Code.

Exit Design — Switch to code mode in 2Code.

change variable — A change variable block.

An 'if/Else' command.

Repeat until.

Creating a variable in 2Code.

'If' Statement
A computer uses an IF statement to decide which bit of code to run. IF a condition is true, then the commands inside the block will be run.

Input
Information going into the computer. This could be the user moving or clicking the mouse, or the user entering characters on the keyboard. On tablets there are other forms such as finger swipes, touch gestures and tilting the device.

Prompt
A question or request asked in coding to obtain information from the user in order to select which code to run.

Repeat
This command can be used to make a block of commands run a set number of times or forever.

Run
Clicking the Play button to make the computer respond to the code.

Event
An occurrence that causes a block of code to be run. The event could be the result of user action such as the user pressing a key (when Key) or clicking or swiping the screen (when Clicked, when Swiped). In 2Code, the event commands are used to create blocks of code that are run when events happen.

Key Vocabulary

Action
The way that objects change when programmed to do so. For example, move or change a property.

Background
In 2Code the background is an image in the design that does not change.

Command
A single instruction in 2Code.

Execute
This is the proper word for when you run the code. We say, 'the program (or code) executes.'

Properties
These determine the look and size of an object. Each object has properties such as the image, scale and position of the object.

Alert
This is a type of output. It shows a pop up of text on the screen.

Button
A type of object that responds to being clicked on.

Debug/Debugging
Fixing code that has errors so that the code will run the way it was designed to.

Selection
Selection is a decision command. When selection is used, a program will choose which bit of code to run depending on a condition.

Timer
In coding, use a timer command to run a block of commands after a timed delay or at regular intervals.

Algorithm
A precise, step-by-step set of instructions used to solve a problem or achieve an objective.

Code blocks
A way to write code using blocks which each have an object or an action. Each group of blocks will run when a specific condition is met or when an event occurs.

Design
In coding, this is a plan for the program showing the visual look of the user interface (the screen) with the objects. The algorithm can be represented as part of the design, showing actions and events.

Nest
When coding commands are put inside other commands. These commands only run when the outer command runs.

Implement
When a design is turned into a program using coding.

Repeat until
In 2Code this command will repeat a block of commands until a condition is met.

Sequence
This is when a computer program runs commands in order.

Variable
A named area in computer memory. A variable has a name and a value. The program can change this variable value. Variables are used in programming to keep track of things that can change while a program is running.

Flowchart
A diagram that uses specifically shaped, labelled boxes and arrows to represent an algorithm as a diagram.

'If/Else' Statement
A conditional command. This tests a statement. If the condition is true, then the commands inside the 'if block' will be run. If the condition is not met, then the commands inside the 'else block' are run.

Object
Items in a program that can be given instructions to move or change in some way (action). In 2Code Gibbon, these include character, turtle, button, vehicle, animal, food, shape, number, input and label.

| Topic | Spanish – My Family | Theme | Children | Year Group | 4 |

Mi familia

phonics

ca	sound in: • única
ci	sound in: • cien 100
co	sound in: • único
cu	sound in: • cuarenta 40 • cincuenta 50

accents — Accents indicate the vowel is stressed. As seen in the words tí-o and ú-ni-ca.

stress placement — Words that end in a vowel, 'n' or 's' are normally stressed on the second to last syllable like her-ma-no.

vocabulary

The nouns and determiners for family members.

The 2 words for the possessive adjective 'my' in Spanish.

| mi | mis |

Numbers 1-70 in Spanish:

10 20 30 40 50 60 70

High-frequency verbs

| se llama | tiene |
| *he/she is called* | *he/she has* |

grammar

To fully understand the role of gender and plurality in the choice of possessives.

| mi hermano | mi hermana |

Singular possessive adjective

mis abuelos

To move from the 1st person conjugation of high-frequency verbs to 3rd person singular.

| tengo | tiene |
| *I have* | *he/she has* |

What I will learn:

☐ Objective 1: I will learn the nouns and determiners for several family members in Spanish.

☐ Objective 2: I will learn how to move from using the determiner 'a' with a family member noun to a possessive adjective 'my' in Spanish.

☐ Objective 3: I will learn to answer the question '¿Tienes hermanos?' (Do you have any brothers or sisters?)

☐ Objective 4: I will learn how to introduce family members, learning to use 'se llama' (he/she is called).

☐ Objective 5: I will use my knowledge of larger numbers to be able to describe the age of family members.

| Topic | Design Technology – Structure: Pavilions | Theme | Children | Year Group | 4 |

Structure - Pavilions

Aesthetic	How an object or product looks.
Cladding	A material put on top of another material or on a structure as protection or to improve appearance.
Design criteria	A set of rules to help designers focus their ideas and test the success of them.
Evaluation	When you look at the good and bad points about something, then think about how you could improve it.
Frame structure	A way of building something so that the inside supports are built first and the outside covering is added afterwards as cladding.
Function	The purpose of an object (for example a chair needs to hold a person when sitting down); or how the product works (for example a torch needs to provide light in a dark space).
Inspiration	To gain ideas from different sources such as the internet, magazines and books.
Pavilion	A decorative building or structure for leisure activities.
Reinforce	To make a structure or material stronger, especially by adding another material or element to it.
Stable	Object does not easily topple over.
Structure	Something that has been made and put together and can usually stand on its own (e.g. a building, a bridge, a chair).
Target audience	A person or particular group of people at whom a product is aimed.
Target customer	A person or particular group of people who you expect to buy the product.
Texture	The way that something feels when you touch it (e.g. soft, rough, smooth).
Theme	An idea or specific design that your product or structure is based on (e.g. space-themed).

You can create all sorts of **textures** for your **cladding** designs using different materials and techniques.
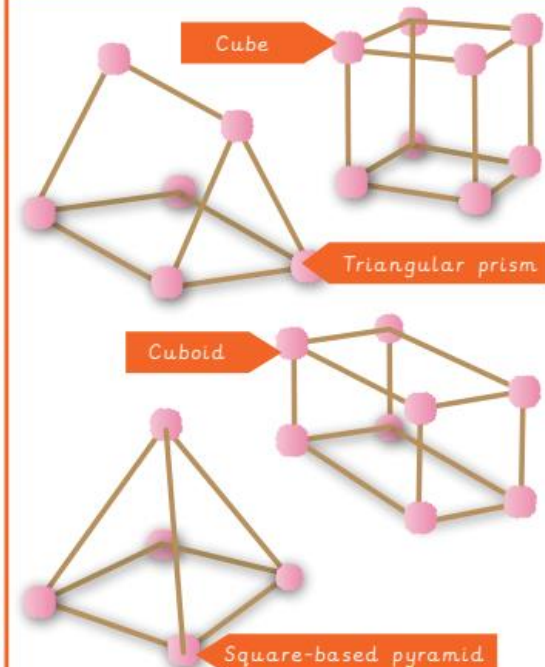
Weave

Concertina fold

Cut-outs

Key facts

There are variety of ways to assemble a **frame structure**.

Cube

Triangular prism

Cuboid

Square-based pyramid

What materials and equipment could you use to make your **structure**?

| Topic | Art and Design – Powerprints | Theme | Children | Year Group | 4 |

Collaborate	Work in a group to create a shared artwork
Collage	Cutting, arranging and sticking materials like paper, fabric etc to a background
Composition	Putting different elements together in a pleasing way
Engraving	Lines cut into a hard surface which is covered in ink and printed
Printing technique	Creating prints in different ways e.g. monoprint, block print
Proportion	How big one element of an artwork appears compared to the whole thing
Shading	Drawn marks to illustrate degrees of light and dark
Tone	How light or dark something is
Wax-resist	Using wax to stop another material, like paint, from sticking permanently to a surface

Mark making with a pencil

Hatching

Cross-hatching

Henri Matisse

- Painted with bold shapes and colours in the 'Fauvist' style.
- Made paper cut-outs when he could no longer stand up to paint.
- He called his collage style 'Painting with scissors'.

Mark making with charcoal

- Use the tip of the charcoal for sharp lines
- Blend light and dark areas to create tone.
- Use a rubber to draw light tones.

Proportion

- Use the relative size and shape of objects to help draw them in proportion.
- Artists use proportion to help make drawings look realistic.
- Artists can exaggerate proportion to draw attention to one aspect of an artwork.

Creating contrast

Textures

Patterns

Light and dark

Block printing

- Draw your design on the polystyrene block, pressing in with the pencil
- Don't press too hard!
- Apply ink or paint to the block
- Press the block ink-side down to print it

Artists

Georges Seurat

Ed Ruscha

Fernando Botero

Alberto Giacometti

Henry Moore

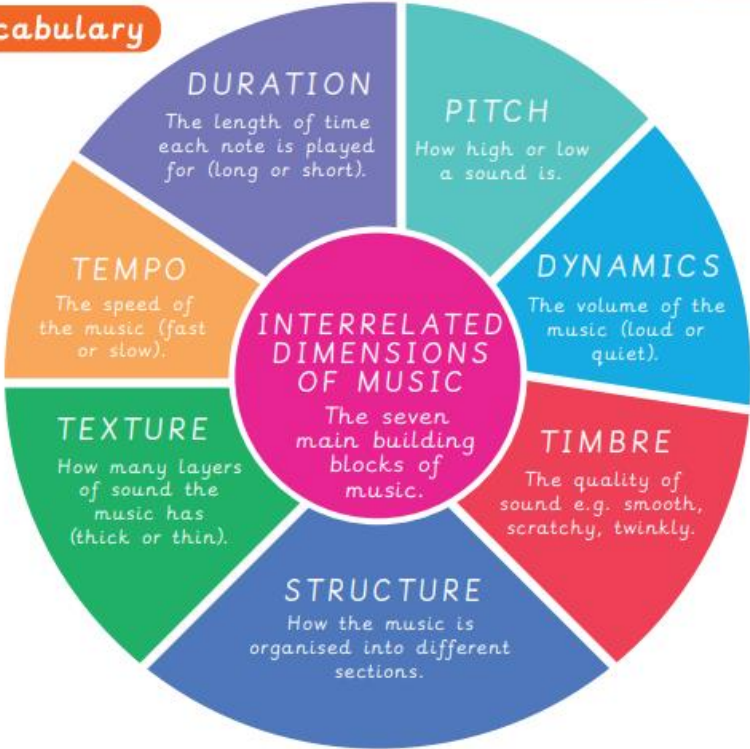| Topic | Music – Body and tuned percussion | Theme | Children | Year Group | 4 |

Year 4: Body and tuned percussion (Rainforests)

Musical style: Body percussion

Body percussion is a style of music where you use your body to make sounds. You can make many different sounds by slapping, hitting, stamping, and rubbing!

Tapping foot

Clapping

Clicking fingers

Vocabulary

INTERRELATED DIMENSIONS OF MUSIC — The seven main building blocks of music.

DURATION — The length of time each note is played for (long or short).

PITCH — How high or low a sound is.

DYNAMICS — The volume of the music (loud or quiet).

TIMBRE — The quality of sound e.g. smooth, scratchy, twinkly.

STRUCTURE — How the music is organised into different sections.

TEXTURE — How many layers of sound the music has (thick or thin).

TEMPO — The speed of the music (fast or slow).

Appraising	Assessing and discussing a performance or piece of music.
Melody	Notes of different pitches played in a sequence to create a tune.
Rhythm	A pattern of long and short sounds (and silences) within a piece of music.
Contrast	An obvious difference.
Layers	The different instruments, rhythms or melodies that build the overall texture.
Transition	Music that links one section of a piece of music to another.

Kapow Primary