

# Tremors



Year Group: 3/4

Cycle B

## Science

- Materials
- States of matter

## Climate/Environment

- Sources of greenhouse gases (link to volcanos)

## Design and Technology

- Design and build either a model volcano that lights up, or a building that vibrates/shakes as if in an earthquake

## Geography

Physical geography: Volcanoes and earthquakes

- use maps, atlases, globes and digital/computer mapping to locate countries and describe features studied
- describe and understand key aspects of physical geography, including: mountains, volcanoes and earthquakes.

# Science

**National Curriculum (Knowledge and Skills):** Pupils should be taught to:

## Properties and Changes of Materials

- 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

## States of Matter

- 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)

## Working Scientifically

- ask relevant questions and use different types of scientific enquiries to answer them
- set up simple practical enquiries, comparative and fair tests
- make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- gather, record, classify and present data in a variety of ways to help in answering questions
- identify differences, similarities or changes related to simple scientific ideas and processes
- report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- use straightforward scientific evidence to answer questions or to support their findings
- use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

## Investigation Focus:

### Rock suitability

(e.g. <https://www.tes.com/teaching-resource/rocks-and-soils-science-investigation-6403906>)

## Climate/Environment Focus:

- *Sources and effects of greenhouses gases*
- <https://www.twinkl.co.uk/teaching-wiki/greenhouse-gases>
- <https://www.geographyinthenews.org.uk/issues/issue-31/investigating-what-causes-climate-change/ks2/>
- <https://www.kidsagainstplastic.co.uk/wp-content/uploads/2020/04/Greenhouse-Experiment.pdf>

## Prior Learning

**Forever Firs children working at ARE should already be able to:**

### 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
- 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

### Working Scientifically

- ask simple questions and recognise that they can be answered in different ways
- observe closely, using simple equipment
- perform simple tests
- gather and record data to help in answering questions
- identify and classify
- use their observations and ideas to suggest answers to questions

Key Vocabulary			
Tier 1	Tier 2		Tier 3
Same Different Soil Rock Melt Burn Heat Cool Freeze	Compare Group Similar Appearance Properties Formed Solid Liquid Gas State Matter Evaporate Temperature Boil Evidence Findings Predictions	Purpose Durabilit Enquiry Practical Comparative Fair Test Systematic Observation Findings Table Record Data Differences Similarities	Sedimentary Metamorphic Igneous Fossil Organic matter Degrees Celcius Permeability

Science Assessment			
Children working below ARE	Children working towards ARE	Children working at ARE	Children working above ARE

# Geography

**National Curriculum:** Pupils should be taught to:

- use maps, atlases, globes and digital/computer mapping to locate countries and describe features studied
- describe and understand key aspects of physical geography, including: mountains, volcanoes and earthquakes.

## Age Related Subject Skills (Progression Guidance):

### Year 3

#### Using maps

- Follow a route on a map with some accuracy
- Locate places using a range of maps including OS & digital
- Begin to match boundaries (e.g. find same boundary of a country on different scale maps)
- Use 4 figure compasses, and letter/number co-ordinates to identify features on a map

#### Map knowledge

- Locate the UK on a variety of different scale maps
- Name & locate the counties and cities of the UK

#### Making maps

- Try to make a map of a short route experiences, with features in current order
- Create a simple scale drawing
- Use standard symbols, and understand the importance of a key

### Year 4

#### Using maps

- Follow a route on a large-scale map
- Locate places on a range of maps (variety of scales)
- Identify features on an aerial photograph, digital or computer map
- Begin to use 8 figure compass and four figure grid references to identify features on a map

#### Map knowledge

- Locate Europe on a large-scale map or globe,
- Name and locate countries in Europe (including Russia) and their capitals cities

#### Making maps

- Recognise and use OS map symbols, including completion of a key and understanding why it is important
- Draw a sketch map from a high viewpoint

### Prior Learning

**Forever Firs children working at ARE in Year 3 should already be able to:**

#### Using maps

- Follow a route on a map
- Use simple compass directions (North, South, East, West)
- Use aerial photographs and plan perspectives to recognise landmarks and basic human and physical features

#### Map knowledge

- Locate and name on a world map and globe the seven continents and five oceans.
- Locate on a globe and world map the hot and cold areas of the world including the Equator and the North and South Poles

#### Making maps

- Draw or make a map of real or imaginary places (e.g. add detail to a sketch map from aerial photograph)
- Use and construct basic symbols in a key

## Key Vocabulary

### Tier 1

Map  
Atlas  
Globe  
Smoke  
Mountains

### Tier 2

Countries  
Formation  
Eruption  
Liquid  
Gas  
Molten  
Ash

### Tier 3

Digital/computer mapping  
Physical geography  
Lava flow  
Magma  
Tectonic plates  
Earth's Crust  
Core  
Mantle  
Plate boundary  
Fault line  
Tsunami  
Volcanoes  
Earthquakes

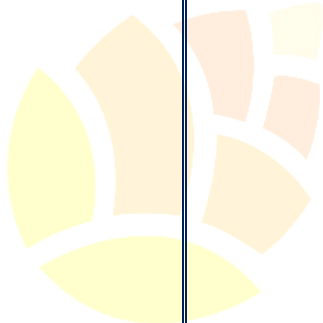
Geography Assessment

Children working below ARE

Children working towards ARE

Children working at ARE

Children working above ARE



Firs  
Primary  
School

# Design and Technology

## National Curriculum:

- generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
- select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities
- understand and use electrical systems in their products [e.g. series circuits incorporating switches, bulbs, buzzers and motors]

## Key Line of Enquiry

- Children will design and build either a model volcano that lights up, or a building that vibrates/shakes as if in an earthquake.

## Age Related Subject Skills (Progression Guidance):

### Year 3

#### Design

- Gather information about the needs and wants of particular individuals and groups
- Develop their own design criteria and use these to inform their ideas
- Research designs
- Share and clarify ideas through discussion
- Model their ideas using prototypes and pattern pieces
- Use annotated sketches, cross-sectional drawings and diagrams
- Use computer-aided design

#### Make

- Select tools and equipment suitable for the task
- Explain their choice of tools and equipment in relation to the skills and techniques they will be using
- Select materials and components suitable for the task
- Explain their choice of materials and components according to functional properties and aesthetic qualities Order the main stages of making
- Produce detailed lists of tools, equipment and materials that they need
- Follow procedures for safety
- Use a wider range of materials and components, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components
- Measure, mark out, cut and shape materials and components with some accuracy
- Assemble, join and combine materials and components with some accuracy apply a range of finishing techniques, include those from art and design, with some accuracy

### Year 4

#### Evaluate

- Identify the strengths and weaknesses of their ideas and products
- Consider the views of others, including intended users, to improve their work
- Refer back to their design criteria as they design and make
- Use their design criteria to evaluate their completed products
- Investigate - how well products have been designed, how well products have been made, why materials have been chosen, what methods of construction have been used, how well products work, how well products achieve their purposes and how well products meet user needs and wants
- Identify the strengths and weaknesses of their ideas and products
- Consider the views of others, including intended users, to improve their work
- Investigate - who designed and made the products, where products were designed and made, when products were designed and made and whether products can be recycled or reused

#### Technical Knowledge

- Understand how to use learning from science and maths to help design and make products that work
- Know that materials have both functional properties and aesthetic qualities
- Know that materials can be combined and mixed to create more useful characteristics
- Know that mechanical and electrical systems have an input, process and output
- Use the correct technical vocabulary for the projects they are undertaking

- Understand how simple electrical circuits and components can be used to create functional products
- Know how to make strong, stiff shell structures

**Prior Learning Forever Firs children in Year 3 and 4 working at ARE should already be able to:**

**Design**

- State the purpose of the design and the intended user
- Explore materials, make templates and mock ups e.g. moving picture / lighthouse
- Generate own ideas for design by drawing on own experiences or from reading

**Make**

- Select from a range of tools and equipment explaining their choices
- Select from a range of materials and components according to their characteristics
- Follow procedures for safety
- Use and make own templates
- Measure, mark out, cut out and shape materials and components
- Assemble, join and combine materials and components Use simple fixing materials e.g. temporary – paper clips, tape and permanent – glue, staples
- Use finishing techniques, including those from art and design

**Evaluate**

- Talk about their design ideas and what they are making
- Make simple judgements about their products and ideas against design criteria
- Suggest how their products could be improved Evaluating products and components used
- Investigate - what products are, who they are for, how they are made and what materials are used

**Technical Knowledge**

- Understand about the simple working characteristics of materials and components
- Understand about the movement of simple mechanisms including levers, sliders (Year 1) wheels and axles (Year 2)
- Know the correct technical vocabulary for the projects they are undertaking
- Understand how freestanding structures can be made stronger, stiffer and more stable

**Key Vocabulary**

**Tier 1**

make  
light  
shake

**Tier 2**

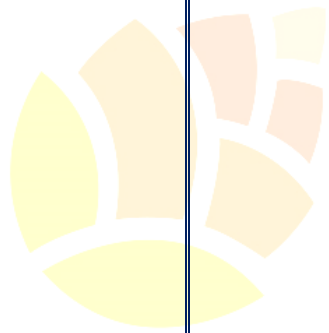
design  
construct  
materials  
components  
electrical  
wires  
buzzer  
motor  
light  
shake  
vibrate

**Tier 3**

circuit  
batteries  
cells  
bulbs

## Design and Technology Assessment

Children working below ARE	Children working towards ARE	Children working at ARE	Children working above ARE



Firs  
Primary  
— School —





Firs  
Primary  
— School —



Firs  
Primary  
— School —



Firs  
Primary  
— School —