



**INSPIRE NURTURE BELIEVE ACHIEVE**

*Working together to be the best that we can be.*

**Happiness**

**Perserverance**

**Resilience**

**Kindness**

**Friendship**

**Respect**

## **Science: Rocks Progression of Skills and Milestones Document**

## Year 3 Rocks and Soils

- 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.

### Notes:

*Linked with work in geography, pupils should explore different kinds of rocks and soils, including those in the local environment. Pupils might work scientifically by: observing rocks, including those used in buildings and gravestones, and exploring how and why they might have changed over time; using a hand lens or microscope to help them to identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them. Pupils might research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed. Pupils could explore different soils and identify similarities and differences between them and investigate what happens when rocks are rubbed together or what changes occur when they are in water. They can raise and answer questions about the way soils are formed.*

### Key Vocabulary

Rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorb water, soil, fossil, marble, chalk, granite, sandstone, slate, soil, peat, sandy/chalk/clay soil

### Common Misconceptions

- Some children may think:
- rocks are all hard in nature
  - rock-like, man-made substances such as concrete or brick are rocks
  - materials which have been polished or shaped for use, such as a granite worktop, are not rocks as they are no longer 'natural'
  - certain found artefacts, like old bits of pottery or coins, are fossils
  - a fossil is an actual piece of the extinct animal or plant • soil and compost are the same thing.

### Activities

- Observe rocks closely.
  - Classify rocks in a range of ways, based on their appearance.
  - Devise a test to investigate the hardness of a range of rocks.
  - Devise a test to investigate how much water different rocks absorb.
  - Observe how rocks change over time e.g. gravestones or old building.
  - Research using secondary sources how fossils are formed. • Observe soils closely.
  - Classify soils in a range of ways based on their appearance.
  - Devise a test to investigate the water retention of soils.
  - Observe how soil can be separated through sedimentation.
  - Research the work of Mary Anning
- *TAPS practical assessments to be used at the end of each unit.*

### • Possible Evidence

- Can classify rocks in a range of different ways, using appropriate vocabulary
  - Can devise tests to explore the properties of rocks and use data to rank the rocks
  - Can link rocks changing over time with their properties e.g. soft rocks get worn away more easily
  - Can present in different ways their understanding of how fossils are formed e.g. in role play, comic strip, chronological report, stop-go animation etc.
  - Can identify plant/animal matter and rocks in samples of soil
  - • Can devise a test to explore the water retention of soils
- *Concept Cartoons' and 'Exit Cards' to be used at the end of lessons to assess understanding.*

# Y3 Proof of Progress - Working Towards (Basic), Age Related (Advancing) and Greater Depth Expectations (Deep)

Compare and group together different kinds of rocks on the basis of their simple, physical properties.

## Basic

Name different types of rock.

Describe the properties (including hardness) of a variety of different rocks.

Label some of the minerals found in rocks.

## Advancing

Compare and contrast the properties of different rocks.

Group rocks on the basis of their properties (rather than their origins).

Infer the names and types of rocks based on their observable properties or descriptions of their minerals.

## Deep

True or false? The colour of a rock is a good clue that helps to identify it?

Always, sometimes or never? Rocks that sparkle have a high quartz content?

See example page!

Relate the simple physical properties of some rocks to their formation (igneous or sedimentary).

## Basic

Observe and describe the properties of igneous and sedimentary rocks.

Describe rocks as igneous or sedimentary.

Describe the properties of igneous and sedimentary rocks.

Illustrate how igneous and sedimentary rocks are formed.

## Advancing

Explain the main differences between igneous and sedimentary rocks.

Compare the origins of different types of rocks and identify patterns that would help you to infer the type of rock.

## Deep

Generalise: how can the hardness of a rock be related to its origins?

Describe in simple terms how fossils are formed when things that have lived are trapped within sedimentary rock.

## Basic

Describe the formation of fossils.

Illustrate the formation of fossils.

## Advancing

Identify the types of fossils (Identify patterns) that are most likely to be found in different types of sedimentary rocks (e.g. in shale, limestone, sandstone etc).

## Deep

Is it possible that fossils could be found within igneous rocks? Cite evidence.



Recognise that soils are made from rocks and organic matter.

## Basic

Observe and describe the properties of soils.

Observe and name different types of soils.

Find out about and describe how soil is formed from rocks and organic matter.

Name the 'parent' materials of different types of soils.

## Advancing

Explain how weathering contributes to the formation of soils.

Compare and contrast different types of soils.

Categorise soils using a range of different criteria.

Test soils in various ways in order to identify them.

## Deep

Recommend plants for different soil conditions.

True or false? Alluvial soils are richer in nutrients than most other soils.

Investigate the flooding of the River Nile in ancient Egyptian times and relate this to your knowledge of soils.

See example page!

## End of Lower Key Stage 2 Age Related Expectations

Milestone Indicator	Basic	Advancing	Deep
<p>Compare and group together different kinds of rocks on the basis of their simple, physical properties.</p>	<p><b>Name</b> different types of rock.</p> <p><b>Describe</b> the properties (including hardness) of a variety of different rocks.</p> <p><b>Label</b> some of the minerals found in rocks.</p>	<p><b>Compare</b> and <b>contrast</b> the properties of different rocks.</p> <p><b>Group</b> rocks on the basis of their properties. (rather than their origins)</p> <p><b>Infer</b> the names and types of rocks based on their observable properties or descriptions of their minerals.</p>	<p><b>True or false:</b> The colour of a rock is a good clue that helps to identify it?</p> <p><b>Always, sometimes or never:</b> Rocks that sparkle have a high quartz content?</p>
<p>Relate the simple physical properties of some rocks to their formation (igneous or sedimentary).</p>	<p><b>Observe</b> and <b>describe</b> the properties of igneous and sedimentary rocks.</p> <p><b>Describe</b> rocks as igneous or sedimentary.</p> <p><b>Describe</b> the properties of igneous and sedimentary rocks.</p> <p><b>Illustrate</b> how igneous and sedimentary rocks are formed.</p>	<p><b>Explain</b> the main differences between igneous and sedimentary rocks.</p> <p><b>Compare</b> the origins of different types of rocks and <b>identify patterns</b> that would help one to <b>infer</b> the type of rock.</p>	<p><b>Generalise:</b> how can the hardness of a rock be <b>related</b> to its origins?</p>
<p>Describe in simple terms how fossils are formed when things that have lived are trapped within sedimentary rock.</p>	<p><b>Describe</b> the formation of fossils.</p> <p><b>Illustrate</b> the formation of fossils.</p>	<p>Identify the types of fossils (<b>identify patterns</b>) that are not likely to be found in different types of sedimentary rocks [e.g. in shale, limestone, sandstone etc.]</p>	<p><b>Is it possible</b> that fossils could be found within igneous rocks? <b>Cite evidence.</b></p>
<p>Recognise that soils are made from rocks and organic matter.</p>	<p><b>Observe</b> and <b>describe</b> the properties of soils.</p> <p><b>Observe</b> and <b>name</b> different types of soils.</p> <p><b>Find out about</b> and <b>describe</b> how soil is formed from rocks and organic matter.</p> <p><b>Name</b> the 'parent' materials of different types of soils.</p>	<p><b>Explain</b> how weathering contributes to the formation of soils.</p> <p><b>Compare</b> and <b>contrast</b> different types of soils.</p> <p><b>Categorise</b> soils using a range of different criteria.</p> <p><b>Test</b> soils in various ways in order to <b>identify</b> them.</p>	<p><b>Recommend</b> plants for different soil conditions.</p> <p><b>True or false:</b> Alluvial soils are richer in nutrients than most other soils?</p> <p><b>Investigate</b> the flooding of the river Nile in ancient Egyptian times and <b>relate</b> this to your knowledge of soils.</p>