

Creativity Rocks!

Use a fun game to investigate and describe properties of different rocks.

Background Science

All of the planet's rocks can be grouped into one of three categories: Igneous, Sedimentary or Metamorphic. Igneous rocks are rocks which have been melted, which includes lava erupted from volcanoes and rocks which cool from magma deep underground, such as granite or gabbro. Sedimentary rocks form from grains and crystals which are 'laid down' by water, wind or ice then compacted. They often form in distinct layers and can contain fossils. Metamorphic rocks are rocks which have been changed by heat or pressure deep underground. They include some classic Scottish rocks like 'Lewisian Gneiss' (pronounced 'nice') and Slate.

To identify rocks and help unravel their history, geologists look at a number of features of rock including texture, colour, hardness and crystal/grain shape & size.

The 3 rock types are linked together by the rock cycle.

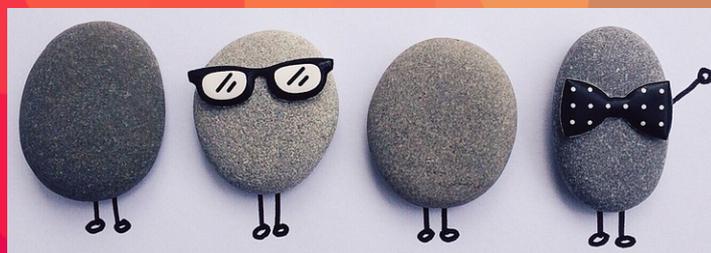
For an animated version of this go to:

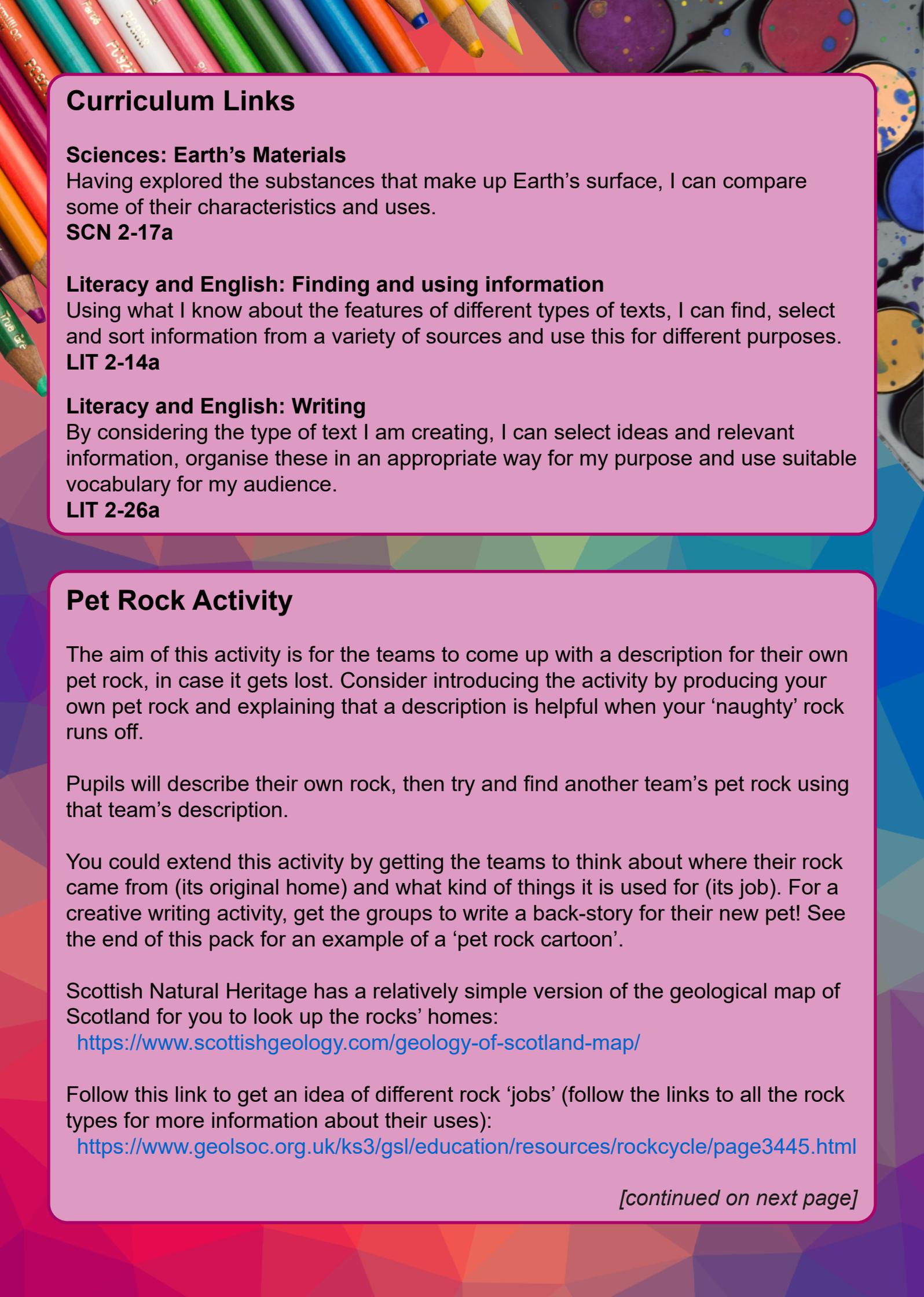
http://www.classzone.com/books/earth_science/terc/content/investigations/es0602/es0602page02.cfm

To have a go at a class activity involving the rock cycle visit:

<https://www.dynamicearth.co.uk/media/1515/rockopera-pack.pdf>

There are lots of interesting ideas in this resource, but look for 'Rock around the rock cycle' on page 2 for an activity specifically related to the rock cycle.





Curriculum Links

Sciences: Earth's Materials

Having explored the substances that make up Earth's surface, I can compare some of their characteristics and uses.

SCN 2-17a

Literacy and English: Finding and using information

Using what I know about the features of different types of texts, I can find, select and sort information from a variety of sources and use this for different purposes.

LIT 2-14a

Literacy and English: Writing

By considering the type of text I am creating, I can select ideas and relevant information, organise these in an appropriate way for my purpose and use suitable vocabulary for my audience.

LIT 2-26a

Pet Rock Activity

The aim of this activity is for the teams to come up with a description for their own pet rock, in case it gets lost. Consider introducing the activity by producing your own pet rock and explaining that a description is helpful when your 'naughty' rock runs off.

Pupils will describe their own rock, then try and find another team's pet rock using that team's description.

You could extend this activity by getting the teams to think about where their rock came from (its original home) and what kind of things it is used for (its job). For a creative writing activity, get the groups to write a back-story for their new pet! See the end of this pack for an example of a 'pet rock cartoon'.

Scottish Natural Heritage has a relatively simple version of the geological map of Scotland for you to look up the rocks' homes:

<https://www.scottishgeology.com/geology-of-scotland-map/>

Follow this link to get an idea of different rock 'jobs' (follow the links to all the rock types for more information about their uses):

<https://www.geolsoc.org.uk/ks3/gsl/education/resources/rockcycle/page3445.html>

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Kit List

- 1 rock per team of pupils
- 1 pack 'googly/wiggly' eyes (£6.69 for pack of 200 from Consortium)
- 1 'pet rock' sheet per team (at back of this resource pack)
- 1 opaque tub/container per team, large enough to hide their rock in
- Blu-tack
- 1 x 15cm ruler per team
- 1 x 10cmx2cm strip of black card per team

You can either get pupils to bring in rocks from home or, if you would like specific rock types to look at, you can get collections of most of the main types at:

<https://www.geologysuperstore.com/index.php/rocks-minerals-fossils/rock-specimens.html>

You can buy individual samples for around £1-£5 depending on size.

They also do a 20 specimen set for £31.20 or 10-15 specimen sets of each type of rock for £18-£23.40.

Instructions

1. Stick eyes onto each rock using blu-tack. Hide a rock in each tub, along with a ruler.
2. Hand out rock tubs and 'pet rock' sheets to the teams.
3. Get teams to choose a name for their rock, then write a description on the sheets. Ensure that the rocks stay in the tubs so they are hidden from the view of other teams.
4. Once all the sheets are complete, collect the sheets in and cover the rock-names with the black card strips.
5. Hand out different sheets to each team (i.e. not their original sheet) and set them the challenge of trying to guess which rock they have, based on the descriptions.

Tip - For more of a challenge, use a stopwatch to time the groups and only give them 30 seconds or so at each rock!



Chocolate Rocks

Did you know that Igneous rocks can be linked with chocolate?!

A certain rock-type called 'obsidian' is the best example of this. If lava meets cold water or ice, it cools so quickly that crystals don't have time to form. This makes it a 'glass'. Chocolate is also cooled quickly so it is a 'glass' too! Chocolate splits into curving fractures, just like obsidian.

You can extend this by comparing other types of chocolate to different rocks, e.g. bubbly 'aero' chocolate = pumice, chocolate with bits in = granite, Kit-Kat = layered sedimentary rock.

Boring chocolate – geologists use boreholes to find out what rocks are under the surface that we wouldn't normally be able to see. Use an apple corer to take cores from different chocolate bars e.g. Mars bar, Twix, Milky Way, and compare the layers to rock layers.

Activity 1

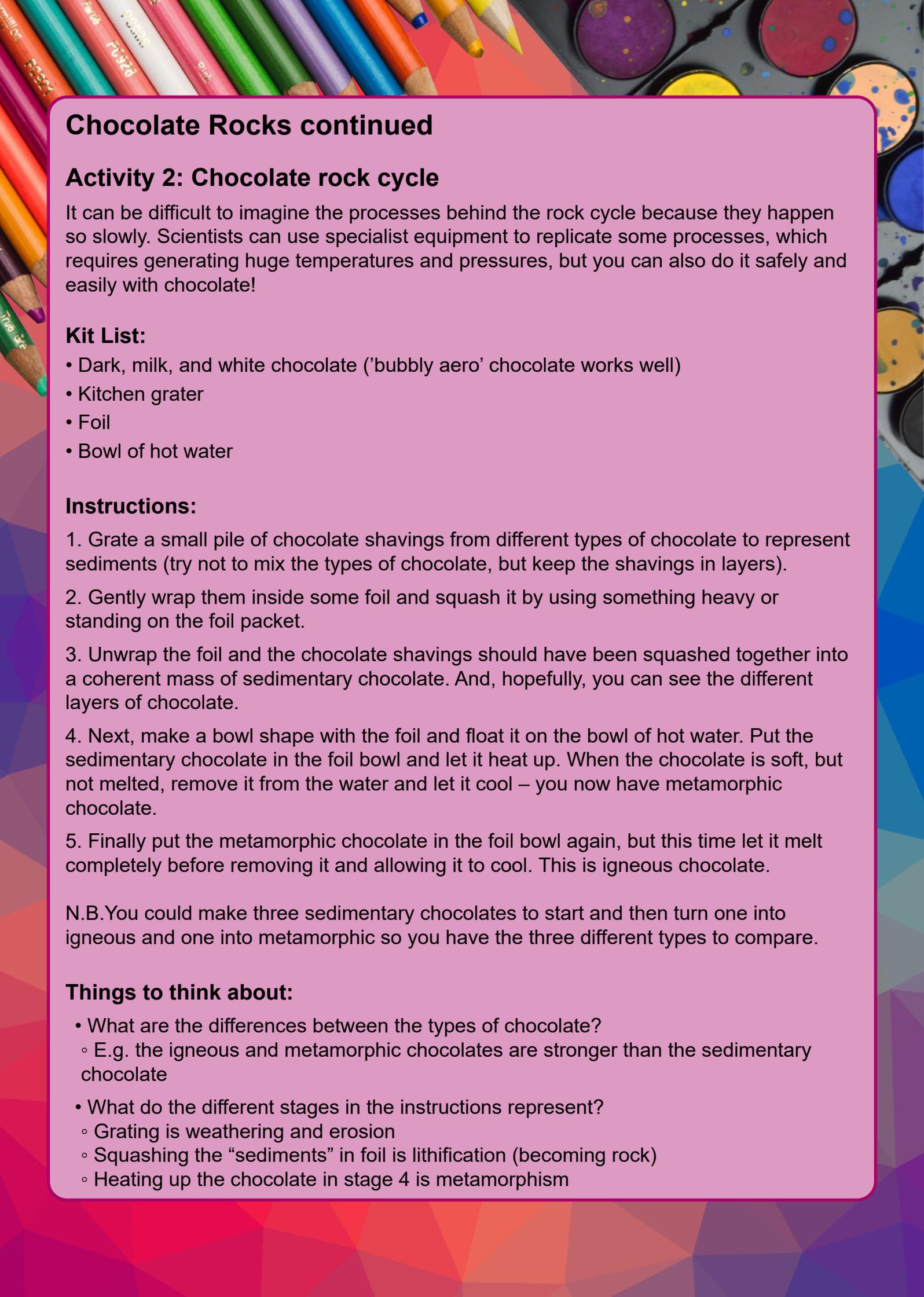
- Collect together some of these rock and chocolate types, then challenge your pupils to match them up based on their textures - how quickly can they do it?
- Can you think of any other comparisons? How about Lava Bombs and 'malteasers'?
- Get creative in the kitchen and have a go at making 'chocolate volcanoes' with volcano moulds and strawberry jam for the magma inside.

(15-hole chocolate mould 'Vertigo' with crater shape at the top, £8.75 from Amazon)

Fun-fact:

Over millions of years, crystals do start to form in obsidian; the white 'snowflakes' where parts of the rock are changing are just like the crystals you see forming when chocolate is starting to go off!





Chocolate Rocks continued

Activity 2: Chocolate rock cycle

It can be difficult to imagine the processes behind the rock cycle because they happen so slowly. Scientists can use specialist equipment to replicate some processes, which requires generating huge temperatures and pressures, but you can also do it safely and easily with chocolate!

Kit List:

- Dark, milk, and white chocolate ('bubbly aero' chocolate works well)
- Kitchen grater
- Foil
- Bowl of hot water

Instructions:

1. Grate a small pile of chocolate shavings from different types of chocolate to represent sediments (try not to mix the types of chocolate, but keep the shavings in layers).
2. Gently wrap them inside some foil and squash it by using something heavy or standing on the foil packet.
3. Unwrap the foil and the chocolate shavings should have been squashed together into a coherent mass of sedimentary chocolate. And, hopefully, you can see the different layers of chocolate.
4. Next, make a bowl shape with the foil and float it on the bowl of hot water. Put the sedimentary chocolate in the foil bowl and let it heat up. When the chocolate is soft, but not melted, remove it from the water and let it cool – you now have metamorphic chocolate.
5. Finally put the metamorphic chocolate in the foil bowl again, but this time let it melt completely before removing it and allowing it to cool. This is igneous chocolate.

N.B. You could make three sedimentary chocolates to start and then turn one into igneous and one into metamorphic so you have the three different types to compare.

Things to think about:

- What are the differences between the types of chocolate?
 - E.g. the igneous and metamorphic chocolates are stronger than the sedimentary chocolate
- What do the different stages in the instructions represent?
 - Grating is weathering and erosion
 - Squashing the "sediments" in foil is lithification (becoming rock)
 - Heating up the chocolate in stage 4 is metamorphism



Congratulations!



On your new pet!

Name of Rock: _____

I am **Sandstone** and I am 394-384 million years old!

Some good places to find me on Shetland are **Braewick Beach, Muckle Hell, Sumburgh Head and Broken Brough.**

Here is my story...

Once upon a time in Shetland...

Scotland is close to the equator (again!). Shetland is a flat plain near the Caledonian Mountains.

Grains of sand sink to the bottom of a lake or river, or the sea-bed.

Layers and layers of sand build up...

Get squished and turn into new rock!

LOST!

Our pet rock is called _____ and we
have lost it!

We have described our pet rock below.
Can you help us find it?

Pet Rock Description

Colour (write down the colours of your pet rock)

Surface (write down a word or words to describe the surface of
your pet rock, for example is it rough or smooth, shiny or bubbly?)

Shape (what is the shape of your pet rock?)

Size (how big is your pet rock?)

Thank you for helping us find our lost pet rock!