

EduTrend Contents

W4C · EARTH SCIENCE & GEOLOGY · MIDDLE SCHOOL

Crayon Rock Cycle

Model how rocks form and change.

Ages 11–14 | Level: Intermediate | 60 minutes | Groups of 3 · up to 30 | Activity 03

Inside: activity at a glance · step-by-step session plan · facilitator notes · 3 student worksheets · assessment checklist

ACTIVITY 03 · AT A GLANCE

Crayon Rock Cycle

Students model the rock cycle with wax crayons. They make sediment from shavings, compact it into a sedimentary layer, press and warm it to model metamorphic rock, and (by teacher demonstration) melt and cool it to model igneous rock. They then compare their models with real rock samples and explain each process.

Learning outcomes

By the end of the session students can:

- describe how sedimentary, metamorphic and igneous rocks form;
- relate model stages to real processes such as weathering, compaction, heat and pressure;
- compare models with real rock samples;
- evaluate the strengths and limits of a model.

KEY WORDS

rock cycle · sediment · compaction · cementation · metamorphic · igneous · crystal

CURRICULUM LINKS

Science: rocks, the rock cycle, models. Geography: landscapes and volcanoes.

1	2	3	4	5	6
QUESTION What do we want to know?	**OBSERVE** Look and handle	**PREDICT** What might happen?	**TEST** Try it fairly	**RECORD** Measure and note	**EXPLAIN** Read the evidence

Materials (per group)

- 3 wax crayons of different colours, pencil sharpener or grater
- Foil squares, heavy book or wooden block
- Warm water bath at about 50 °C (teacher)
- Samples of sandstone, marble or slate, granite, basalt
- Hand lens
- Worksheets 1, 2 and 3

Before the session

- Prepare a warm water bath (not above 60 °C).
- Cut foil squares.
- Set up a melting demonstration station for the teacher only.
- Label rock samples.

SAFETY

Graters and sharpeners used carefully. Only the teacher melts crayons, using a warm water bath, not a flame. Warm foil can be hot: handle with care.

ACTIVITY 03 · SESSION PLAN

Step by step

Timings are for 60 minutes. The igneous stage is a teacher demonstration.

Time	What happens	Say or ask
0–5 min Hook	Show sandstone, marble and granite. How could one rock turn into another?	*"Are rocks forever?"*
5–15 min Weathering	Groups shave crayons into small piles of "sediment".	*"What breaks real rocks into pieces?"*
15–25 min Sedimentary	Groups layer colours on foil, fold and press under a book.	*"What do the layers show?"*
25–35 min Metamorphic	Groups warm the foil package in the water bath and press again.	*"What changed? Did it melt?"*
35–45 min Igneous (demo)	Teacher melts crayon in foil over warm water and lets it cool.	*"How is this different?"*
45–60 min Compare and explain	Groups compare models with real rocks and complete Worksheet 2 and 3.	*"Where does the model fall short?"*

CHALLENGE CARD (print or copy onto the board)

Make all three rock types from one set of crayons and explain which real process each step represents.

ACTIVITY 03 · FACILITATOR NOTES

The geology in brief

Weathering breaks rocks into sediments, which are carried away and deposited in layers. Over time the layers are compacted and cemented into sedimentary rock such as sandstone. Heat and pressure deep underground change rocks without melting them, forming metamorphic rocks such as marble and slate.

If rock melts completely, it forms magma. When magma cools, crystals grow and igneous rocks form: slowly underground (large crystals, as in granite) or quickly at the surface (small crystals, as in basalt). These processes link together in the rock cycle over millions of years.

Common ideas to listen for

- "Metamorphic rocks are melted." They change in the solid state.
- "The rock cycle happens quickly." Most stages take thousands to millions of years.
- "Rocks are always in the same order." Any rock can follow different paths around the cycle.

Adapting the activity

Support

Provide a labelled rock cycle diagram to annotate during the practical.

Stretch

Cool melted crayon quickly and slowly and compare the texture; link to crystal size in igneous rocks.

WORKSHEET 1

Model record

Name: _____ Class: _____ Date: _____

Draw or stick a small piece of each model.

My models

Stage	What I did	What it looks like	Real process
Sediment			
Sedimentary			
Metamorphic			
Igneous			

WORKSHEET 2

Real rocks

Compare your models with real samples.

Comparison

Real rock	Type	Evidence I can see
Sandstone		
Marble or slate		
Granite		
Basalt		

One strength and one weakness of the crayon model

WORKSHEET 3

Rock cycle diagram

Draw the rock cycle with arrows and label the processes.

Diagram

Include weathering, deposition, compaction, heat and pressure, melting, cooling.

FOR THE TEACHER

Assessment checklist

Use during the session. One sheet covers up to eight students; copy as needed.

Student	Links model to process	Compares with real rocks	Evaluates the model

Suggested codes: W = working towards · E = expected · G = greater depth

ABOUT THIS ACTIVITY

Crayon Rock Cycle is a sample activity from the EduTrend Contents W4C Earth Science & Geology programme (middle school, level: intermediate). Every activity in the programme follows the same format: a practical challenge, a clear session plan, facilitator notes and ready-to-print worksheets, so that teachers, club leaders and parents can run it without extra preparation.

Full 15-, 20- and 32-week programmes are available from EduStore at edutrend.org.

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