# *The rock cycle* **Teacher background notes**

**In this investigation, students explore the processes in the rock cycle that result in new rocks being formed. Through hands-on investigation, students learn about the formation and properties of the different types of rocks**.

## [Australian Curriculum: Science links](https://assist.asta.edu.au/resource/4100/rock-cycle-year-8-cle)

## Learning intentions

Students will be able to:

* describe the formation and characteristics of igneous, sedimentary and metamorphic rocks and identify examples;
* identify the different rock types based on common features;
* identify and describe the processes in the rock cycle that result in new rocks being formed;
* construct a model of the rock cycle.

## Suggested time for this CLE

The time needed to complete The rock cycle CLE will depend on the depth of the prior knowledge of students, the time to perform the four investigations—‘The formation of sedimentary rocks’, ‘The formation of metamorphic rocks’, ‘The formation of igneous rocks’ and ‘Classifying rocks’—and follow up with any further extension activities. Allow 6–12 hours.

## Prior conceptual knowledge

The students have not yet studied rocks or the processes that form them. They have only studied changes to the Earth’s surface due to natural hazards and human activity.

Science / Year 6 / Science Understanding / Earth and space sciences

Content description

*Sudden geological changes or extreme weather events can affect Earth’s surface* [*(*ACSSU096)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSSU096)

Science / Year 4 / Science Understanding / Earth and space sciences

Content description

*Earth’s surface changes over time as a result of natural processes and human activity* [*(ACSSU075*)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSSU075)

## New concepts to be introduced

Students will be introduced to the three types of rocks and their properties. They should be able to use these properties to identify rocks. Information about the properties of each rock type can be found at ‘What type of rock do I have?’, The Rock Cycle, *Minerology4Kids* website, <http://www.mineralogy4kids.org/rock-cycle/what-type-rock-do-i-have>.

Students will also be introduced to the rock cycle. They should be able to identify the processes that occur to form each type of rock. Some background information about these processes can be found on the web resource ‘The Rock Cycle’ on The Geological Society of London’s website:

* Weathering <https://www.geolsoc.org.uk/ks3/gsl/education/resources/rockcycle/page3461.html>
* Erosion and transport <https://www.geolsoc.org.uk/ks3/gsl/education/resources/rockcycle/page3462.html>
* Deposition of sediment <https://www.geolsoc.org.uk/ks3/gsl/education/resources/rockcycle/page3463.html>
* Compaction and cementation <https://www.geolsoc.org.uk/ks3/gsl/education/resources/rockcycle/page3559.html>
* Deformation and metamorphism <https://www.geolsoc.org.uk/ks3/gsl/education/resources/rockcycle/page3571.html>
* Deformation of rocks <https://www.geolsoc.org.uk/ks3/gsl/education/resources/rockcycle/page3572.html>
* Metamorphism <https://www.geolsoc.org.uk/ks3/gsl/education/resources/rockcycle/page3576.html>

## Possible misconceptions

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| **STUDENTS MAY THINK…** | **INSTEAD OF THINKING…** |
| All the processes in the rock cycle take place at the same rate. | The accumulation of sediments on the ocean floor is very slow compared to the much faster deposition of a landslip. |
| Layered rocks are always sedimentary. | Metamorphic rocks (foliated) can also be layered. |
| One type of rock can only change to another type of rock. | Any rock, including sedimentary rocks, can be weathered and become sedimentary rocks.  All rocks can be melted to form igneous rocks, and heat and pressure can turn any rock into metamorphic rock. |
| Metamorphic rocks melt a little. | If rock is ‘melting’ then it will become an igneous rock if it leaves the mantle. |
| Any amount of pressure or heat will cause a rock to metamorphose. | Some pressure may just make sedimentary rock. Too much heat will melt rock and it may become igneous rock. |
| Metamorphic rocks require both heat and pressure. | There are cases of metamorphism that are just heat or predominantly pressure. |

## Links to further information

* ‘Experiments and demonstrations’, The Rock Cycle, The Geological Society of London website <https://www.geolsoc.org.uk/ks3/gsl/education/resources/rockcycle/page3652.html>
* ‘Interactives Rock Cycle’, Annenberg Learner website, <https://www.learner.org/series/interactive-rock-cycle/>

**Note: This interactive uses Flash and therefore won't work on an Apple iPad.**

* ‘The rock cycle’, *Minerology4Kids* website, <http://www.mineralogy4kids.org/rock-cycle>
* ‘3 types of rocks’, *YouTube* (8.05 min) <https://youtu.be/17l2LrjZi9o>
* ‘Year 8 Rocks and Minerals’, Woodside Australian Science Project (WASP) website, <http://www.wasp.edu.au/mod/page/view.php?id=87>