

## The roll and rock board game

### Education in Chemistry

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**Help students avoid the common misconception that there is only one set path through the rock cycle with this simple board game**

The Earth's rocks do not stay the same forever. Processes such as weathering, erosion and large earth movements cause them to continually change between different forms. These changes are shown in the rock cycle. Many students mistakenly believe that there is only one set path through the rock cycle.

To combat this misconception, this board game helps students see there is a range of processes that cause rocks to be interchanged between the different forms. Students roll a dice to determine the conditions and move around the board. The winner is the first to collect 'samples' (cards) of a sedimentary, metamorphic and igneous rock. The second page of this document includes instructions for your students.

### Instructions

**Number of players:** 3

**To play the game students will need:**

- A copy of the game board (ideally printed on A3 and laminated)
- Metamorphic, sedimentary and igneous rock sample cards placed in the collection zones
- A rock sample collection record card for each player – *available to download along with the sample cards and game board from the EiC article [‘How to teach the rock cycle at 11– 14’](#)*
- A counter for each player
- A dice

### Rules

The aim of the game is to move around the rock cycle and collect samples of rock. The winner is the first person to collect a sample of each of the three rock types: **sedimentary**, **igneous** and **metamorphic**.

1. Each player chooses a starting position in one of the sedimentary, metamorphic or igneous rock zones.
2. Players take it in turns to roll the dice. Each number indicates a different physical process as indicated below:
 

1 – compaction and cementation	4 – melting
2 – weathering and erosion	5 – cooling
3 – heat and pressure	6 – roll again
3. Players move along the arrow of the physical process that the number on the dice relates to. If there is no arrow relating to the physical processes that start from their position on the board, players remain in the same position and await their next turn. Players must move if a move is possible.
4. When a player lands on a rock zone, they collect a card from the appropriate collection pile and record the name of the rock collected on their rock sample collection record card.
5. The winner is the first person to collect a sample of each of the three rock types and complete their record.

### Extension activity

Students can research the chemical composition of the rocks they have collected and see if they are related by the physical processes identified in the game.



## Instructions

The aim of the game is to move around the rock cycle and collect samples of rock. The winner is the first person to collect a sample of each of the three rock types: **sedimentary**, **igneous** and **metamorphic**.

**Number of players:** 3

**To play the game you will need:**

- 1 game board
- 16 rock sample cards
- 1 dice
- 3 rock sample collection record cards (one for each player)
- 3 counters (one for each player)

## Set-up

1. Place the metamorphic, sedimentary and igneous rock sample cards face-up in the relevant collection zones.
2. Write your name on your collection record card.
3. Choose one of the three rock zones to start in and place your counter there.
4. Each number on the dice represents a different process in the rock cycle, apart from 6 which means 'roll again'.

The processes are labelled along with their corresponding numbers on the game board, but make a note of which process each number relates to:

### Numbers on the dice:

1 – compaction and cementation	4 – melting
2 – weathering and erosion	5 – cooling
3 – heat and pressure	6 – roll again

## Playing rules

1. Players take it in turns to roll the dice.

If you roll a number that relates to a physical process that is possible from your position on the board, move along the corresponding arrow to the next stage of the cycle. You must move if a move is possible.

If there is no arrow relating to a physical process that starts from your position on the board, you must remain in the same position and await your next turn.

*For example, if your counter is on 'Igneous rock zone', you must roll a 2, 3, or 4 to move forwards. If you rolled a 2, you would move your counter along the 'weathering and erosion' arrow to the 'Sediments' zone. If you rolled a 1 or a 5, you would stay where you are. If you rolled a 6, you would get to roll again.*

2. If you can move, move your counter along the arrow of the corresponding physical process and place your counter in the next zone.
3. If you land on a rock zone, collect a card from the appropriate collection pile and record the name of the rock you have collected on your collection record card. If you land on sediments or magma, do not collect a card.
4. The winner is the first person to complete their record card by collecting a sample of each of the three rock types (**sedimentary**, **igneous** and **metamorphic**).