# Rock Cycle Routes

Model one clastic-rock pathway, then add a different route.

**6.5** "Obtain, evaluate, and communicate evidence that explains how constructive and destructive processes shape Earth's surface. a. Develop and use models to demonstrate the processes that form rocks and cycle Earth's materials. b..."

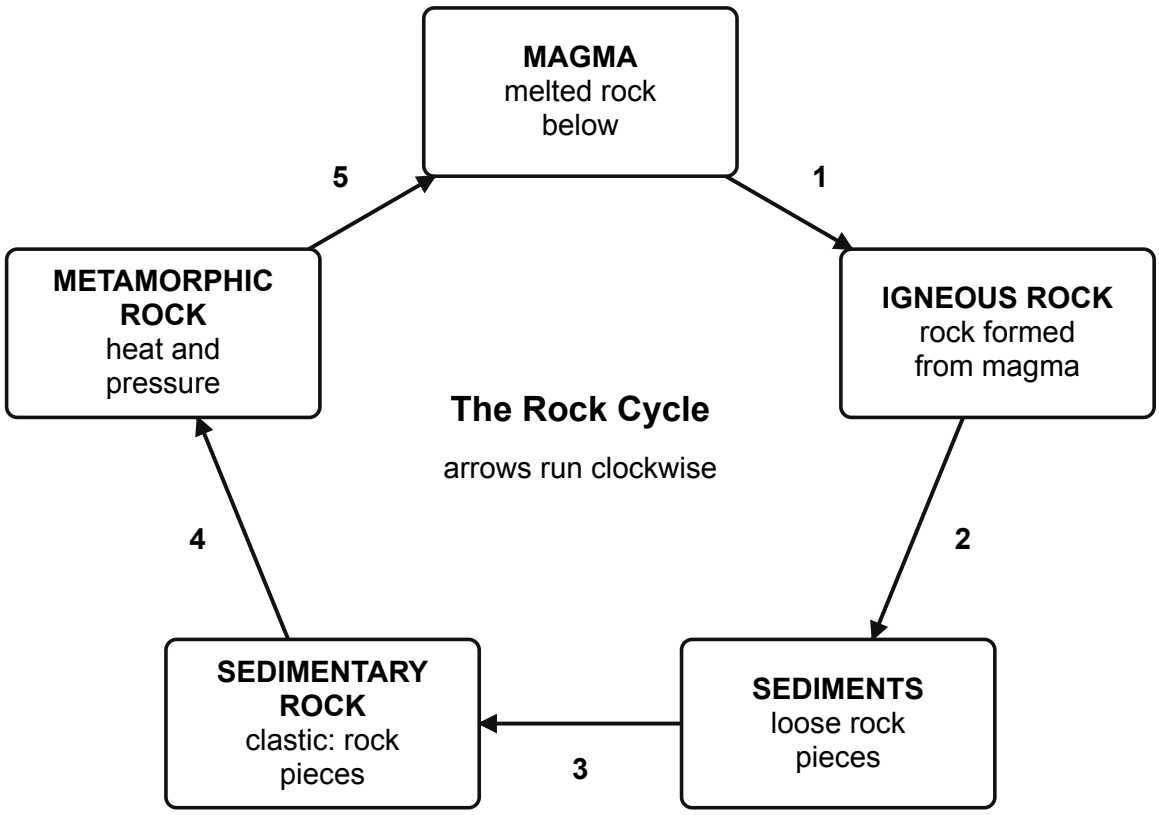
NAME _____ DATE _____

## 1 LABEL THE MODEL

Word bank below

Write one word-bank process in each numbered arrow box. Use each process once: cooling and crystallization, weathering and erosion, compaction and cementation, heat and pressure, melting.

**WORD BANK** compaction and cementation | cooling and crystallization | heat and pressure | melting | weathering and erosion




Arrow numbers match the response boxes on the next student section.

### Label the arrows

Use the word bank to write the process for each numbered arrow.

| Arrow 1 | Arrow 2 | Arrow 3 |
| --- | --- | --- |
| | | |

| Arrow 4 | Arrow 5 |
| --- | --- |
| | |

## 2 RUN THE MODEL

Use your finished diagram

1. In this clastic-rock pathway, which process forms sedimentary rock from sediment?

2. In this model, what follows sedimentary rock, and how does it change without melting?

3. Trace the model from metamorphic rock to igneous rock. What stage lies between them?

## 3 CHECK IT

Before you turn it in

- [ ] I matched each arrow to a change.
- [ ] I used each word-bank process once.
- [ ] I can trace the loop back to its start.

**TEST THE MODEL**

Draw and label one extra arrow on the model to show a valid rock-cycle route missing from the loop. Explain its process.

**ANSWER KEY**

# Rock Cycle Routes

**GRADE 6 · 6.5**

## PART 1 · COMPLETED MODEL

| ARROW | FROM | TO | PROCESS |
|---|---|---|---|
| 1 | MAGMA<br>melted rock below | IGNEOUS ROCK<br>rock formed from magma | cooling and crystallization |
| 2 | IGNEOUS ROCK<br>rock formed from magma | SEDIMENTS<br>loose rock pieces | weathering and erosion |
| 3 | SEDIMENTS<br>loose rock pieces | SEDIMENTARY ROCK<br>clastic: rock pieces | compaction and cementation |
| 4 | SEDIMENTARY ROCK<br>clastic: rock pieces | METAMORPHIC ROCK<br>heat and pressure | heat and pressure |
| 5 | METAMORPHIC ROCK<br>heat and pressure | MAGMA<br>melted rock below | melting |

## PART 2 · RUN THE MODEL

1. **Compaction and cementation turn deposited rock fragments into clastic sedimentary rock.** (In this clastic-rock pathway, which process forms sedimentary rock from sediment?)
2. **Metamorphic rock follows. Heat and pressure change the existing solid rock; melting would instead produce magma.** (In this model, what follows sedimentary rock, and how does it change without melting?)
3. **Magma.** (Trace the model from metamorphic rock to igneous rock. What stage lies between them?)

## TEST THE MODEL (SAMPLE ANSWERS)

- Sedimentary rock can break down into sediments through weathering and erosion.
- Igneous rock can change directly into metamorphic rock through heat and pressure.

The arrows show one possible clastic-rock route, not a compulsory sequence. Chemical and biological sedimentary rocks are not represented. Metamorphism changes solid rock without melting. Accept other valid additional arrows with matching process labels. Sources: National Park Service, Sedimentary Rocks and Metamorphic Rocks.