Rock Cycle Routes

Follow the changes from one rock type to another.

6.5.a "Develop and use models to demonstrate the processes that form rocks and cycle Earth's materials."

NAME _____ DATE _____

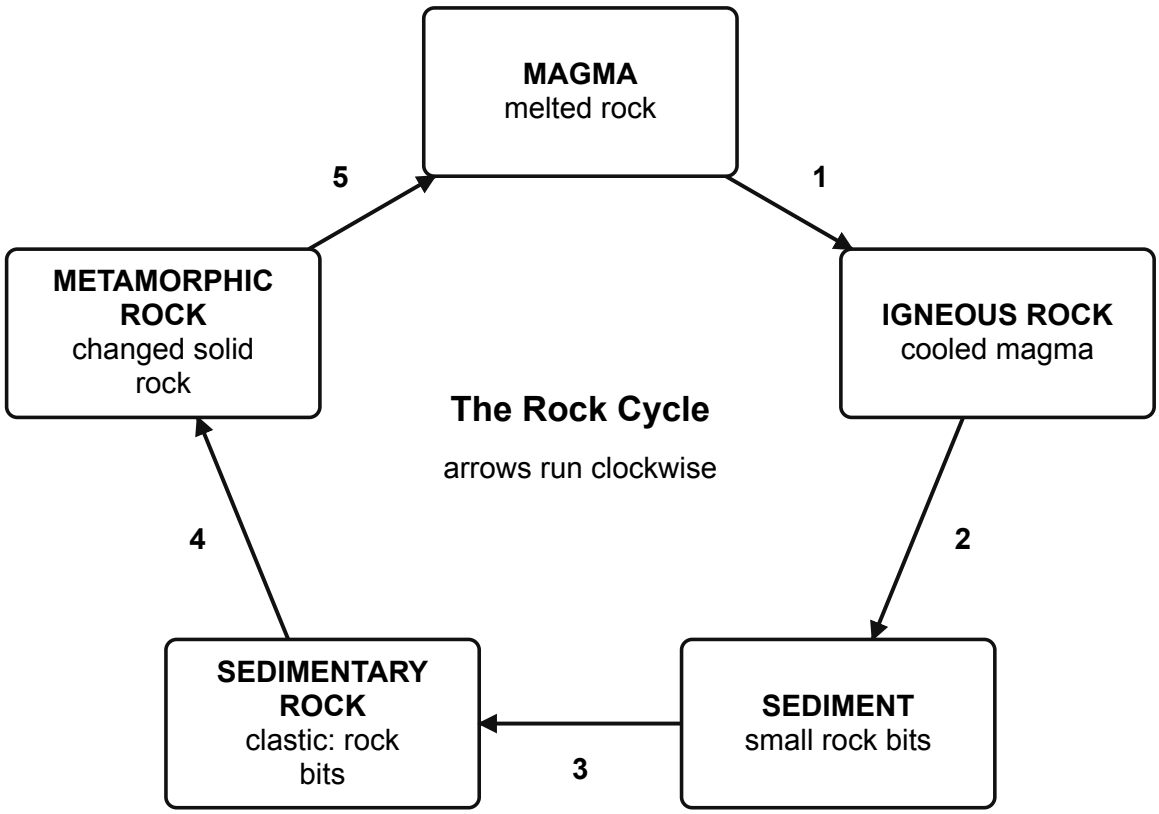
1 LABEL THE MODEL

Word bank below

Complete the loop with the word bank. Then add two arrows between existing boxes to show other scientifically valid rock-cycle routes; label the process on each new arrow. Use your revised model when answering.

WORD BANK

- compaction and cementation
- cooling
- 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. What forms when magma cools? Use a process and stage from your model to explain.

2. Describe one arrow you added, naming its starting rock, process and destination. Explain how it changes the original loop.

3. Trace a route from metamorphic rock back to igneous rock. What intermediate material and processes are needed?

3 CHECK IT

Before you turn it in

- [ ] I completed the original cycle.
- [ ] I added and labeled two valid branches.
- [ ] I explained a route using my revised model.

TEST THE MODEL

What path can rocks take that the original printed loop leaves out? Explain whether you added it.

ANSWER KEY

Rock Cycle Routes

GRADE 6 · 6.5.a

PART 1 · COMPLETED MODEL

ARROW	FROM	TO	PROCESS
1	MAGMA melted rock	IGNEOUS ROCK cooled magma	cooling
2	IGNEOUS ROCK cooled magma	SEDIMENT small rock bits	weathering and erosion
3	SEDIMENT small rock bits	SEDIMENTARY ROCK clastic: rock bits	compaction and cementation
4	SEDIMENTARY ROCK clastic: rock bits	METAMORPHIC ROCK changed solid rock	heat and pressure
5	METAMORPHIC ROCK changed solid rock	MAGMA melted rock	melting

PART 2 · RUN THE MODEL

1. **Igneous rock forms when magma cools and solidifies.** (What forms when magma cools? Use a process and stage from your model to explain.)
2. **For example: igneous rock → metamorphic rock by heat and pressure without melting. This branch bypasses the sediment and sedimentary stages in the original loop.** (Describe one arrow you added, naming its starting rock, process and destination. Explain how it changes the original loop.)
3. **Metamorphic rock melts into magma, which cools and solidifies into igneous rock.** (Trace a route from metamorphic rock back to igneous rock. What intermediate material and processes are needed?)

TEST THE MODEL (SAMPLE ANSWERS)

- Heat and pressure can change igneous rock directly into metamorphic rock.
- Weathering and erosion can break sedimentary rock into sediment.

Check both added arrows, not just the original labels. Accept any correct nonduplicate route with a matching process. The pictured sedimentary route is clastic; not all sedimentary rocks are cemented fragments. Real rocks can follow many routes and do not have to traverse the whole loop. Sources: National Park Service, sedimentary and metamorphic rock pages.