

Rock Words That Work Together: Sorting, Mapping and Choosing Terms

Learning target: I can sort rock-cycle terms by what kind of thing they name, place processes on the arrows of a cycle, and choose the right term for a new situation.

Vocabulary in action

About 35 min

Individual

MS-ESS2-1 · practice

independent practice

writing

Name _____

Date _____

Period _____

Directions

This sheet is about how the words of this chapter are related to each other, not about copying definitions. Read the word bank once. Then work through Parts A to D in order; each part is a different kind of thinking. In Part B the figure is deliberately incomplete; you supply the missing process names. In Part D, use at least six terms from the word bank and underline each one.

You will need: This worksheet, Pencil, Colored pencils (optional, for marking energy sources in Part B)

mineral

A naturally formed solid with a fixed chemical makeup whose atoms sit in a repeating pattern. Most rocks are built from one or more minerals.

crystal

A solid whose atoms repeat in an orderly pattern. Every mineral grain in a rock is a crystal, whether or not it looks shiny.

texture

How big a rock's grains or crystals are, what shape they have and how they are arranged: a clue to how the rock formed.

magma

Melted rock below Earth's surface. When it reaches the surface it is called lava.

igneous rock

Rock that formed when melted rock cooled and its minerals crystallized.

intrusive

Describes igneous rock that cooled slowly underground, so its crystals had time to grow large.

extrusive

Describes igneous rock that cooled quickly at the surface, so its crystals are tiny or it is mostly glass.

weathering

The breaking down of rock where it sits, either into pieces (physical) or by chemical reactions that change or dissolve its minerals (chemical).

erosion

The carrying away of weathered material by water, wind, ice or gravity.

deposition

The dropping of sediment when the water, wind or ice carrying it slows down and loses energy.

sediment

Loose pieces of rock, mineral grains, shells or other material that can be carried and dropped.

compaction and cementation

Two steps that turn loose sediment into sedimentary rock: the weight of overlying layers squeezes the grains together, and minerals carried by water glue them.

sedimentary rock

Rock made from sediment that was compacted and cemented, or from minerals that crystallized out of water, or from the remains of living things.

metamorphic rock

Rock whose texture or minerals were changed by heat and pressure while it stayed solid.

deformation

The slow bending and squeezing of solid rock, which can stretch its crystals and line them up in bands.

recrystallization

The regrowth of a rock's crystals into new or larger crystals while the rock stays solid, for example when heat flows in from nearby magma.

rock cycle

A model of all the routes by which rock material changes from one type to another, and of the energy that drives each route.

Part A: What kind of thing is it?

Some words in this chapter name a **kind of rock**. Some name a **process**, which is something that happens to rock. Some name a **material that is not rock yet**. Sort each word below into one of those three bins and write the clue that told you.

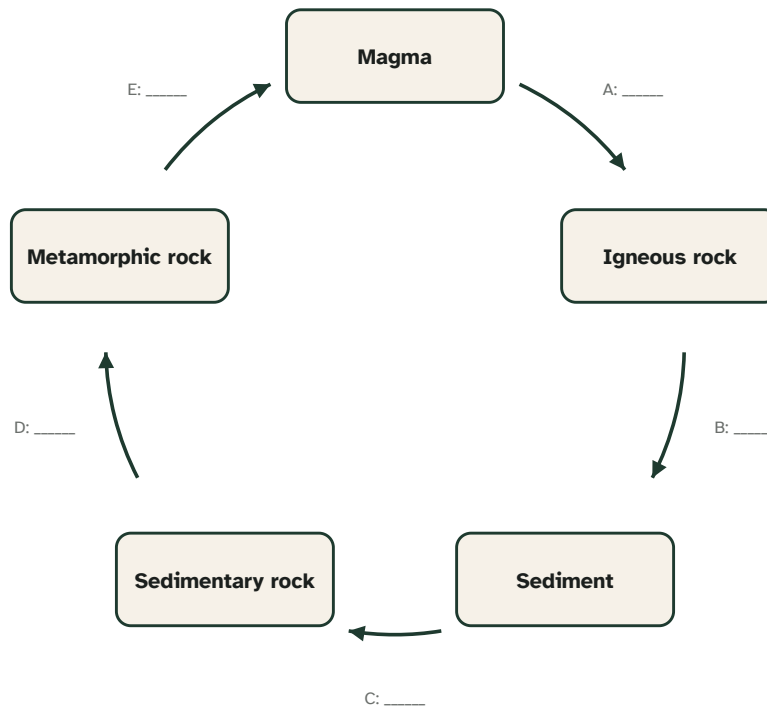
1. Complete the table. Then count the words in each bin and name the word that was hardest to place.

Bin: rock type / process / material (not yet rock)	The clue that told you
magma	
weathering	
sandstone	
sediment	
recrystallization	
basalt	
deposition	
marble	
lava	

2. Two words in the table name the same material in two different places. Which two, and what decides which word you use?

Part B: Fill the arrows

One loop through the rock cycle (processes missing)



A simplified rock cycle with the process names removed from the arrows. Each arrow is lettered. The figure shows only one loop on purpose; you will fix that in q4.

3. Write the process (or pair of processes) that belongs on each arrow. A: magma to igneous rock. B: igneous rock to sediment. C: sediment to sedimentary rock. D: sedimentary rock to metamorphic rock. E: metamorphic rock to magma.

4. The figure makes it look as if rock must travel the loop in order. Name two arrows that are missing from the figure but belong in a correct rock cycle, and say which process each one needs.

5. Sort arrows A to E by energy source. Which arrows run on energy from Earth's hot interior? Which run on energy from the Sun (plus gravity)? Explain one of your choices.

Part C: Which term fits?

Each description below is a situation a geologist might meet. Write the **one or two** terms from the word bank that fit best and give a reason of one sentence.

6. A broken piece of rock shows interlocking crystals so large you can see each one without a lens.

7. A gray rock is made of flattened, shiny flakes that all lie in the same direction, in wavy bands.

8. A desert lake dries up every summer and leaves a white crust of cube-shaped crystals on its bed.

9. Water seeping between buried sand grains leaves behind a mineral coating that glues the grains to each other.

10. A light, frothy gray rock full of tiny holes floats on water and is mostly natural glass.

11. A river slows as it enters a lake and drops its load of sand near the river mouth.

12. Two words are often confused: **weathering** and **erosion**. A boulder cracks in half during a freezing night. Later, a flood rolls one half down the valley. Which word goes with each event, and what is the difference between the two words?

Part D: Use the words in a new situation

A volcanic island rises from the sea. Lava pours out and hardens on its slopes. Rain and waves attack the hardened rock for thousands of years, and the pieces collect on the seafloor just offshore. Much later, plates collide, the seafloor layers are squeezed deep under a new mountain range, and some of them are heated by a body of magma.

13. Retell the island's story in your own words using at least **six** terms from the word bank. Underline each term. Your story must say which rock type exists at each stage and must name the energy source behind at least two of the changes.

A test for each bin

Ask one question for each word. 'Can I hold a piece of it and call it a rock?' If yes, it is a rock type. 'Is it something that happens, something I could describe with a verb like breaking, carrying, dropping or growing?' If yes, it is a process. 'Is it stuff that could become rock but is not rock now, like loose grains or melted rock?' If yes, it is a material. For Part B, remember the two energy sources: anything that happens at the surface with water, wind or ice runs on the Sun; anything that needs heat or squeezing deep underground runs on Earth's interior.

One grain, many names

Choose a single mineral grain inside an intrusive igneous rock. Write a diary of that grain, in six short entries, in which the grain passes through at least four different stages of the rock cycle in an order that is NOT the loop shown in Part B. At each entry, name the rock type or material the grain is part of, the process that moved it to the next stage, and the energy source. Then explain in two sentences why the grain's atoms never disappear even though the rock around it changes.