

Beneath our feet · Learning journey

Learning with a grown-up · Ages 4–8 · Flexible participation

What is the ground made of?

Compare three rock formation stories, then zoom out to a simplified view of Earth's layers.

Begin with one visible rock contrast before introducing hidden processes. Return to Soil as a bridge between the nearby ground and much larger Earth models.

Teacher sequence

Three Kinds of Rocks: Connect each pictured rock example to a different formation process.

At the Inside Earth poster, find the rocky outside. What can the two posters tell us together?

Inside Earth: Name the outside and center layers and recognize the cutaway as a simplified model.

Compare with the Soil enlarged view. How do both drawings help show something hidden, and how are their scales different?

What to listen for

Invite learners to tell what a diagram helps show and one reason it is not an exact photograph or scale model.

Three Kinds of Rocks

What can a rock's formation story tell us?

Learning aim: Connect each pictured rock example to a different formation process.

A five-minute conversation

Start by describing the pictured textures, then introduce the three names: igneous, sedimentary and metamorphic. Connect each to its example and formation story. Read that granite forms slowly underground, sandstone can form from sand, and heat can change rock into a different rock without melting it. Keep the focus on comparing processes, not memorizing labels.

Remember: Choose one comfortable way to notice or describe a detail. What do you already wonder about this picture?

Start here: Compare the sandy and speckled examples.

Explore further: Explain why looking at color alone would not identify every rock.

Which pictured rock looks sandy?

Answer cue: Sandstone.

Which type begins as melted rock that cools and hardens?

Answer cue: Igneous rock; granite is the example.

Does the rock melt when it changes into metamorphic rock?

Answer cue: No. It changes without melting.

Keep the idea clear

The pictures are examples, not a complete identification key. Color or texture alone cannot reliably identify every rock.

Try: Match a rock to its story

Materials: The poster and an adult; optional paper and drawing materials. Describing or pointing is enough.

1. Choose granite, sandstone and marble from the poster.
2. An adult reads the three formation explanations; match each to its named example.
3. Draw or dictate one formation story, keeping observed appearance separate from the explanation.

What this can show: Granite is the igneous example, sandstone sedimentary and marble metamorphic. These pictures are not a complete identification key.

Return to it: At the Inside Earth poster, find the rocky outside. What can the two posters tell us together?

Three Kinds of Rocks · In the classroom

A 20-minute classroom lesson

Prepare: Read the poster, answer cues and misconception note. Prepare only the materials named in the activity; keep a picture-only or described option available.

Words to explore

igneous — Formed when melted rock cools and hardens.

metamorphic — Rock changed by heat and/or pressure without melting.

3 min · Reconnect and wonder: What can a rock's formation story tell us? Invite an initial idea; record it without marking it right or wrong.

4 min · Look together: Compare the sandy and speckled examples. Introduce igneous using the poster.

8 min · Investigate or represent: Use "Match a rock to its story." Let pairs take turns noticing and recording, with adult help and the activity's stated boundaries.

5 min · Explain and return: Ask the core check: What can a rock's formation story tell us? Accept pointing, words, signing or a drawing. If the learner is ready, offer this optional extension: Explain why looking at color alone would not identify every rock.

Understanding check: What can a rock's formation story tell us?

Answer guidance: Igneous rock forms from cooling melted rock; the sedimentary example forms from particles pressed and stuck together; metamorphic rock changes without melting. Granite is the igneous example, sandstone sedimentary and marble metamorphic. These pictures are not a complete identification key.

Accept pointing, speech, signing, a drawing or adult dictation. Describe the illustration and use labels/position as well as color. Offer one contrast first, and use the extension when the learner is ready.

A response to keep

My idea or question

What I noticed (date/time if useful)

What I think now / my next question

<https://kiddos.ai/learn/learning-with-gina-and-ollie/three-rock-types>

Inside Earth

How can a diagram help us explore something we cannot see directly?

Learning aim: Name the outside and center layers and recognize the cutaway as a simplified model.

A five-minute conversation

Explain that a cutaway is an imagined sliced-open view that helps us study hidden layers. Follow the labels from outside to center. Keep the contrasts clear: the crust is rocky, the mantle is mostly solid and flows very slowly, the outer core is liquid metal, and the inner core is solid metal.

Remember: We compared rock formation stories. Now zoom out from individual rocks to a model of Earth's layers.

Start here: Trace from the crust on the outside to the inner core in the center.

Explore further: Compare the solid inner core and liquid outer core without assuming all hot layers are liquid.

Which layer do we find on the outside?

Answer cue: The thin, rocky crust.

Which core layer is liquid?

Answer cue: The outer core.

Is the mantle a giant ocean of liquid?

Answer cue: No. It is mostly solid and can flow very slowly.

Keep the idea clear

The layer sizes and cutaway are simplified. "Very hot" does not mean that every inside layer is liquid.

Try: Explain a cutaway

Materials: The poster and an adult; optional paper and drawing materials. Describing or pointing is enough.

1. Draw nested shapes or follow the poster's cutaway with a description.
2. Label crust, mantle, outer core and inner core from the outside inward.
3. Tell which parts the drawing helps explain and why its colors and layer widths should not be measured as exact reality.

What this can show: The mantle is mostly solid rock that flows very slowly; the outer core is liquid metal and inner core solid metal. The diagram is not a photograph of an opened Earth.

Return to it: Compare with the Soil enlarged view. How do both drawings help show something hidden, and how are their scales different?

Inside Earth · In the classroom

A 20-minute classroom lesson

Prepare: Read the poster, answer cues and misconception note. Prepare only the materials named in the activity; keep a picture-only or described option available.

Words to explore

crust — Earth's thin rocky outside layer.

cutaway — A drawing that shows inside by leaving part of the outside out.

3 min · Reconnect and wonder: How can a diagram help us explore something we cannot see directly? Invite an initial idea; record it without marking it right or wrong.

4 min · Look together: Trace from the crust on the outside to the inner core in the center. Introduce crust using the poster.

8 min · Investigate or represent: Use "Explain a cutaway." Let pairs take turns noticing and recording, with adult help and the activity's stated boundaries.

5 min · Explain and return: Ask the core check: How can a diagram help us explore something we cannot see directly? Accept pointing, words, signing or a drawing. If the learner is ready, offer this optional extension: Compare the solid inner core and liquid outer core without assuming all hot layers are liquid.

Understanding check: How can a diagram help us explore something we cannot see directly?

Answer guidance: The layers from outside to center are crust, mantle, outer core and inner core. The cutaway helps show their arrangement, but is not a photograph or exact scale model. The mantle is mostly solid rock that flows very slowly; the outer core is liquid metal and inner core solid metal. The diagram is not a photograph of an opened Earth.

Accept pointing, speech, signing, a drawing or adult dictation. Describe the illustration and use labels/position as well as color. Offer one contrast first, and use the extension when the learner is ready.

A response to keep

My idea or question

What I noticed (date/time if useful)

What I think now / my next question

<https://kiddos.ai/learn/learning-with-gina-and-ollie/inside-earth>

Our discovery record

Use words, marks, a drawing or an adult's notes. Keep this page with you; nothing needs to be uploaded.

Date / time (if useful): _____

My question or idea

What I noticed

What I think now

What I want to explore next

Stories to continue together: <https://kiddos.ai/books>

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