

GRAIN SIZE MYSTERY

DESCRIBE ROCKS LIKE EARTH SCIENTISTS

WELCOME

5 min

READING TIME

5 min

Prep:

- Print the article: "Beth Hunter, Earth Scientist" (~3 copies)

ACTIVITY INTRODUCTION

10 min

Prep:

- Print and cut out Grain Size cards

"I suggest that the best geologist is [the one] who has seen the most rocks."

— Herbert Harold Read

Discuss the quote and its author: "Has anyone ever found a really cool rock before?" (Let students share stories.) "Our quote today is from a geologist; they study rocks just like we will today. He's saying that the way you get to be good at geology has mostly to do with just picking up rocks all the time. When you really notice the features of a rock then you're learning something new."

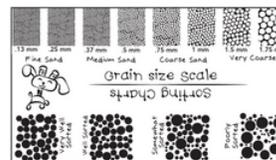
Featured Scientist

Say: "Our featured scientist today is Beth Hunter, she is an Earth scientist. Geologists focus on rocks; Earth scientists look at rocks plus other parts of the Earth, like the ocean. Not only is Beth an Earth scientist, she also helped create this program, STEMTaught, and she grabs lava off of volcanoes!"

Have 3-5 students help read the article out loud.

Introduce Sorting Cards

Say: "Soon we'll head out to find rocks around school to collect and observe. We want to look at them the way an Earth scientist does, so I'm going to show you a simple tool they use called a grain sorting card."



Hold up a grain sorting card.

Say: "You know what a ruler is. This is like a ruler for Earth scientists. They use it to measure the little bits that make up the rock. After you find your rock outside, you'll use this card when looking in the microscope. Let's watch a video to learn more."

Video 1: How do geologists sort sedimentary rocks? (5:04)

GRAIN SIZE MYSTERY

STEM TIME

60-90 min

Materials:

- Microscopes
- Rocks
- Petri dishes
- Sorting cards
- Pippi pipettes
- Vinegar
- Nail



Guiding Questions:

- What do you notice when you look through the microscope?
- How are your rocks similar to or different from each other?
- What colors do you see?

Finish early? If you have goggles and a hammer let the students try breaking their rocks open to see a fresh surface.

Find rocks and zoom in!

1. Go on a rock hunt! Give students time to explore their school and find rocks. A student can collect more than one rock, but they should be different types of rocks, not multiple of the same kind.

Other options:

- Use rocks from STEMtaught crate (shale, sandstone, limestone).
- Hide rocks from the crate outside for the students to find.

Give boundaries as needed, for example:

- No throwing rocks.
- Rocks should fit easily in your hand (ie: not too big/heavy).

2. Bring the rocks back to the room and watch the second video.

Video 2: What characteristics do your rock samples have? (2:34)

Say: “Do you understand what “well-sorted” means? If a rock is well-sorted then all of its grains are basically the same size. If it is not well-sorted then it has grains that are bigger next to grains that are a lot smaller.” **Some rocks have crystals. Try and see what your rock has, grains or crystals.**

3. Each student gets a microscope. They place their rock on a petri dish (so it doesn't scratch the microscope), then turn on the top light. Start making observations!

Say: “We're using our Grain Sorting cards to see three things: how fine the grains of sand in the rock are (what size the grains are), if they are well sorted, and if the grains look really round **or if the rock is made of crystals.**

4. Have students use the Grain Size student sheets for each type of rock **or describe the rock in the picture.** They can draw their own picture **of the rock they collected!**

Limestone	
	Use a microscope to observe and describe your sample. Describe your sample (color, hardness, feel).
Describe grain size	
<input type="checkbox"/> fine grained	
<input type="checkbox"/> medium grained	
<input type="checkbox"/> coarse grained	
<input type="checkbox"/> very coarse grained	
Describe grain sorting	
<input type="checkbox"/> very well sorted	
<input type="checkbox"/> well sorted	
<input type="checkbox"/> somewhat sorted	
<input type="checkbox"/> poorly sorted	
Describe grain roundness	
<input type="checkbox"/> well rounded	
<input type="checkbox"/> round	
<input type="checkbox"/> angular	
<input type="checkbox"/> very angular	
<small>Limestone's story I form in deep ocean environments. I am made from a combination of very fine silt, dust, and dead algae particles and other marine critters that come to rest on the sea floor.</small>	