

Rockin' Good Time

Earth and Space Science
Episode 31

THE COUCH POTATO LAB: ROCKIN' GOOD TIME

Are you ready to ROCK and roll?? Today, we are going to be **geologists** and explore something we see outside almost every day - rocks! After learning about rocks and minerals, we are going to perform an experiment using food to explore the layers of a sedimentary rock (and you'll get a yummy snack too!).

Rocks have been on the earth for a very long time. There are **three** main types of rocks¹ that differ in how they are formed:

1. **sedimentary**: form when particles, like sand, pebbles, and shells, clump together
2. **metamorphic**: form by heat and pressure when the earth's surface squeezes together
3. **Igneous**: form when molten rock cools

All three types of rocks are made of groups of **minerals**, which are natural substances made by the earth. Some examples of minerals are diamond and gold. **Physical properties** are characteristics that can be measured, and exploring physical properties of minerals can help scientists identify the types of rocks. Some physical properties of minerals include²:

1. **Hardness**: if and how a mineral can be scratched.
2. **Luster**: how a mineral looks when light reflects off of it.
3. **Specific gravity**: how dense (compact) a mineral is.
4. **Streak**: the colour of a mineral when crushed into powder.
5. **Cleavage and fracture**: how a mineral breaks into pieces.
6. **Magnetism**: if a mineral is magnetic or not.

Studying rocks helps us learn more about the earth and how it was formed!



Curriculum Connection(s):

RM 4.1 - Investigate physical properties of rocks and minerals, including those found in the local environment.

Materials:

9 cups of crispy rice cereal (ie. Rice Krispies)
16 oz. of mini marshmallows
½ cup of butter
Handful of various candies (ie. chocolate chips, Smarties)
Baking dish (approx. 9 x 13)
Large microwavable bowl
Stirring spoon

STEM at Supper:

What are the 3 types of rocks? What are all rocks made up of?

What are physical properties? Name some physical properties of minerals.

How can scientists use physical properties to identify rocks?



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Interested in taking it one step further? Try this!

Time to learn AND make a yummy snack at the same time! Make sure to get a family member or trusted adult to help you. Grab your ingredients and get ready to make a sedimentary rock!

- 1) Grease the 9 x 13 baking dish.
- 2) Place the $\frac{1}{2}$ cup of butter and 16 oz. of mini marshmallows (or the equivalent of full marshmallows) into the large microwavable bowl and microwave on high for 1 minute.
- 3) Stir the butter and marshmallows, then microwave on high again for 30 seconds.
- 4) Stir the butter and marshmallows again until they are just melted together, and then fold in the 9 cups of crispy rice cereal so it is well combined.
- 5) Add half of the amount of the mixture into the baking dish.
- 6) Press the mixture solid into the baking dish. This is the first layer. What do you think each crispy rice cereal piece represents?
- 7) Add a layer of candy, such as chocolate chips, to completely cover the mixture.
- 8) Add the second half of the mixture into the baking dish on top of the candy from step #7 and press down firmly. How many layers are there now?
- 9) Finally, add a top layer using another type of candy, such as Smarties or M&M's.
- 10) Let your mixture cool for about an hour, then cut your creation into squares and look at the layers. How many layers do you see? What do the layers represent? Which are the oldest and newest layers? Do you see any "minerals"? How could a scientist study the minerals in your creation to identify the kind of rock it is?



<https://rainydaymum.co.uk/edible-sedimentary-rock-activity/>

Extension: check out this cool website explaining how you can build a REAL sedimentary rock!

<https://www.fantasticfunandlearning.com/how-to-make-a-rock-with-kids.html>



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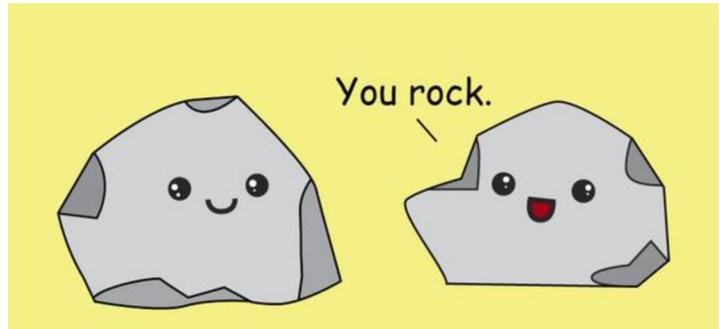
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Now that we've learned about how minerals form to make a sedimentary rock, let's take a closer look at some of the properties of minerals by using materials from our own home!

Materials:

Sample of a few rocks from outside
1 coin
1 magnet
Vinegar
A few clear cups



1. Gather a sample of rocks from outside that look different. These can be from, for example, your backyard or a nearby park. Around 3-4 rocks should do the trick!
2. We will first test the property of **hardness** (remember that hardness describes if/how a mineral can be scratched).
 - a. Pick up your coin and hold it vertically (in the "up and down" orientation).
 - b. Pick up one of your rocks and scratch the coin down one of the sides of the rock.

Did the coin leave a scratch on the rock? If it did, the rock is considered "harder" than other rocks that may not leave scratches! If there was no scratch, your rock is less hard.

- c. Repeat with all other rocks.

3. Next, let's test **magnetism**, which describes whether a mineral is magnetic or not.
 - a. Pick up one of your rocks and your magnet and try to stick them together

Did your rock and magnet stick? If it did, your rock has strong magnetism. If not, your rock is not as magnetic!

- b. Repeat with all other rocks.

These are just two of the many properties that geologists test when identifying minerals. We could do many more tests if we had the right materials!

There is one more thing we can do from home. We are going to test if **carbonate** is present in our rock samples, which is a specific type of salt. When carbonate is mixed with an acid, bubbles form. Let's try mixing our rocks with vinegar (an acid!).

4. Put one rock into one clear cup and pour vinegar on it to cover the rock. Now watch for bubbles!

Do you see bubbles forming? If bubbles are produced, your rock sample contains carbonate. If there are no bubbles, there is no carbonate. Limestone is a type of rock that contains carbonate!

- a. Repeat with all other rocks, putting each rock into a different clear cup.



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STEM Spotlight

Meet Dr. Maria Velez! She is a geologist that works at the University of Regina here in Regina! A geologist is someone who studies the earth and all of its materials. This means that geologists can study rocks, fossils, volcanoes, pieces of meteors that have landed, and many other cool materials from the earth. This allows us to better understand our planet and its natural processes. Dr. Velez went to school in Colombia, the U.K., and the Netherlands to learn how to become a geologist. She focuses on paleontology, which is the study of fossils. Specifically, Dr. Velez explores geology in aquatic systems. This type of research can help to better understand what has happened during the history of the earth, even the history right here in Saskatchewan! What a neat job for a scientist to have.... Dr. Velez truly ROCKS!

