

# Sorting Rocks

Students will have the opportunity to hone their observational skills, and take rock classification to a new level, as they sort and group rocks based on their physical properties.

**Grade Level :** 2nd Grade

## Phenomena:

Keeping accurate records and making close observations is helpful to scientists.

## Objectives:

- Students will observe different properties of rocks.
- Students will describe rocks accurately and scientifically .
- Students will identify rocks using a rock record.
- Students will sort rocks according to their observable properties.

## Materials:

- Rock specimens that exemplify the characteristics talked about in the lesson: dark, light, smooth, rough, jagged, heavy, etc..
- Rock description labels
- Enough Rock Records for each student

## Time Considerations:

- Preparations: 20-30 minutes
- Introduction: 5-10 minutes
- Activity 1: 10 minutes
- Activity 2: 10-15 minutes
- Activity 3: 10 minutes
- Activity 4: 15-20 minutes
- Activity 5: 10-15 minutes
- Conclusion: 5-10 minutes

## Related Activities:

Rocks of the Earth, Rockin' Rocks, Discovering Minerals, Boulders to Bits



## Next Generation Science Standards

### 2-PS1-1

Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

### Science and Engineering Practices (SEP):

Planning and Carrying out Investigations.

### Disciplinary Core Ideas:

Structure and Properties of Matter.

## Background

In order to classify different things in nature, scientists set up specific, intricate, and detailed systems. Geologists, scientists who study the solid and liquid matter that constitutes the Earth as well as the processes and history that shape it, have their own system for classifying rocks. The three rock types are: sedimentary, igneous, and metamorphic. These are classified based on the conditions under which they are formed. Sedimentary rocks are formed by the action of wind, water, snow or organisms. Igneous rocks are formed at very high temperatures. They come from magmas, which are molten mixtures of minerals. Metamorphic rocks are those

## Crosscutting Concepts:

Patterns

## Excellence in Environmental Education Guidelines

### W.2.8

Recall Information from experiences or gather information from provided sources to answer a question

that have been changed from some other type of rock. They change as a result of heat, pressure, or chemical action.

Most rocks are natural combinations of two or more minerals. Minerals are naturally occurring inorganic substances. Minerals have very specific chemical and physical properties. Some minerals consist of only one element, but most are compounds. Minerals are usually identified based on their physical properties. These properties are luster, hardness, color, streak, cleavage, fracture, magnetism, specific gravity, crystal system, and transparency.

Luster is a characteristic of the light reflected by a mineral. Hardness is resistance to

scratching or abrasion. Color is visible light spectrum radiation reflected from a mineral. Streak is the color of the mineral when it is powdered. Cleavage is breakage of a mineral along planes of weakness in the crystal structure. Fracture is the breakage of a mineral, not along planes of weakness in the crystal structure. Magnetism is the electromagnetic force generated by an object or electrical field. Specific gravity is the ratio of the mass of a mineral to the mass of an equal volume of water. Crystal form refers to the geometric shape of a crystal or mineral.

Transparency means the amount of light that can shine straight through the mineral. Students will fine tune their observational skills and implement what they have learned in identifying rocks. The system that will be used in this activity is similar, but not the same as the characteristics previously mentioned. Students will be exposed to the process of accurately and scientifically describing their rocks by making observations in a way that a scientist would. Gather all the appropriate materials for this lesson: rocks, Rock Records, and rock description labels.

## Preparation

In preparation for bad weather, be sure to have enough rocks for each student if you are not

able to go outside for the Rock Hunt.

The rocks that you bring with you to the lesson should have the characteristics you will be talking about in class; smooth rocks, jagged rocks, dark rocks, heavy rocks, etc...

### Introduction

Introduce yourself to the class and tell them your expectations for the lesson.

Briefly review the basic layers of Earth (core, mantle and crust). Tell students today we will be taking a closer look at the layer of the earth we interact with the most.... THE CRUST

Ask: What is an object we can study that makes up the crust? They come in all different shapes and sizes.... ROCKS!

**Transition=> Move Outdoors**

## Doing the Activity

### Activity 1: Rock Hunt

Tell the students that they are to find just one very special rock. Be sure to emphasize that they should only pick up one that they think is special.

**Transition=> Move indoors**

### Activity 2:

#### Getting to Know Your Rock

Ask students to pair up and share

Discuss with the students the different ways in which they could describe their rocks.

Use the pre-made labels to put up on the board as the students come up with them: color, size, shape, texture, weight.

After students have come up



with these different characteristics, help them make a word bank with descriptive words under each label. Brainstorm about 5-10 words for each label.

It is important to emphasize that these descriptive words need to be observable characteristics of their rocks. This is a great time to discuss why you wouldn't use words like "pretty" or "cool" (is your "pretty" the same as my "pretty"?)

### Activity 3: Rock Records

After the students have had the opportunity to look at their rocks and come up with descriptive words for them, tell them they are going to be doing an activity with their rocks.

Hand out the Rock Records to the students.

Be sure to show students where to draw the picture of their rock and where to put the descriptive words they choose for their rock.

Tell the students to make drawings of their rocks as accurate as possible; They should make sure that the rock has details and coloring that match their rock.



#### **Activity 4: Rock Pile**

For this next activity, split the class into groups; Have about 5 groups.

Tell the students to put all the rocks in the center of the group; Move around to each table and add 6-7 new rocks to each table's pile.

Mix rocks up and let students begin their rock hunt.

Ask the students if they are able to find their rock out of the pile.

Discuss with the students how easy or hard it was to find their rock; Ask if they thought their

Rock Record was helpful or not? Why?

After the students have located their rock, have them pile all the rocks back into the center of their circle and pass their rock record to the person sitting next to them.

Give them an allotted amount of time to find their rock using their new rock record.

Ask the students if they thought it was easier or harder to find someone else's rock. Why or why not? Was the Rock Record helpful in finding someone else's rock? (Hopefully they will say yes, but if anyone says the record wasn't helpful, ask the student why they thought this was; what would they change about the Rock Record that could make it more helpful).

#### **Activity 5: Rock Record Switcheroo Challenge**

If there is still time after this activity, tell the students that they are going to switch records and tables. Explain to the students that their goal is to try to find a classmate's rock using their Rock Record.

Students are to place their Rock Records in the center of their desk.

When said to, students should stand and rotate to a new table. Allow about 2-3 minutes for students to study their new

Rock Records; After the allotted amount of time, tell the students to begin their rock hunt.

After all students have had a chance to hunt for their new rock, discuss with them how hard or difficult it was to find their rock. Was the Rock Record helpful or not? Why?

## **Conclusion**

#### **Rock it Up Review:**

After the students have had a chance to explore their rocks and the rocks of some of their classmates, ask them a few questions about rocks; Are all rocks the same? What is it that makes rocks different?

Go back to the labels at the beginning of the lesson and review those; Ask the students what kind of features do or could rocks have?

Hold up a few rocks that have different properties such as: smooth, jagged, sharp, dark, heavy, light, big, small, etc...

Be sure students understand that these characteristics are very important, but the most important thing to scientists is that the record keeping of rocks, meaning the descriptive words, be accurate and precise so that others can use them properly.

## Assessment

Assess students based on their class participation and contribution to class discussions.

Assess the students on their proper use of Rock Records and how well they were able to accurately depict their own rock and pick out the rocks of their classmates.

## Extensions

### **Rock Scavenger Hunt:**

The students could go on a Rock Scavenger Hunt.

Set-up different rocks around the room and hand out worksheets with different types of rocks on it; Examples could be: find a smooth rock, find a heavy rock, find a dark rock.

Each student should be able to go around the room and pick out each type of rock.

### **Rock Trains:**

Students could also make rock trains.

Give the students a few different types of rocks.

Based on your instructions students should line up the rocks according to: biggest to smallest, roughest to smoothest, darkest to lightest.

This activity can be followed by questions such as *are all rocks the same? What characteristics of the rocks were the most difficult to distinguish (meaning was it the most difficult to line up the rocks from heaviest to lightest? Or smoothest to roughest?).*

## Vocabulary

**Characteristics:** Typical qualities or feature used to describe someone or something.

**Color:** A property of an object that reflects light of a certain wavelength. The eye perceives such light as being red, yellow, blue, etc.

**Rocks:** The very hard mineral matter that forms an important part of the earth's crust.

**Shape:** The form or outline of an object or a figure.

**Size:** The measurement of how large or small something is.

**Texture:** The look and feel of something, especially its roughness or smoothness.

**Weight:** The measure of how heavy a person or thing is.

## Sources

- <http://www.chariho.k12.ri.us/curriculum/MISmart/rocks/rocks.html>
- [http://kids-outdoor-activities.suite101.com/article.cfm/activities\\_for\\_kids\\_who\\_collect\\_rocks](http://kids-outdoor-activities.suite101.com/article.cfm/activities_for_kids_who_collect_rocks)
- <http://www.robink.ca/blog/wp-content/uploads/2008/05/rocks.jpg>
- <http://www.d.umn.edu/~gelsc002/5230/glocal/glocal/igneous-rock.jpg>

Name \_\_\_\_\_

What does Your Rock Look Like?

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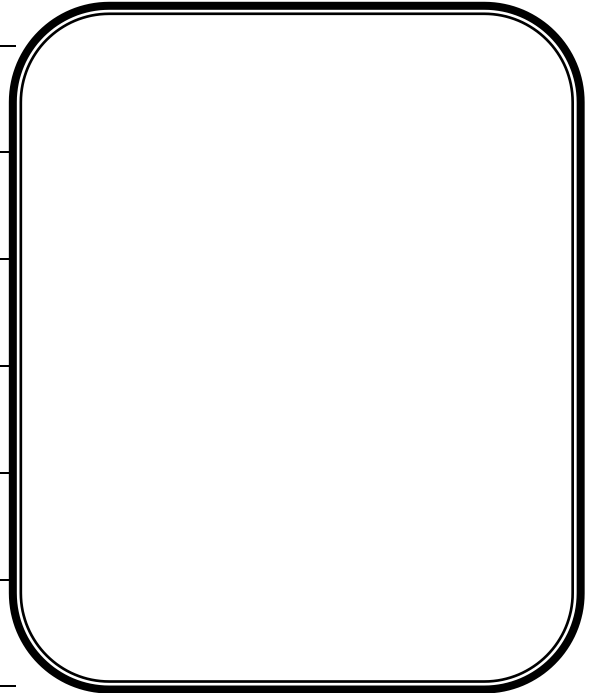
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# Rock Record



Name \_\_\_\_\_

What does Your Rock Look Like?

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# Rock Record

