



Author: Sharon Janulaw

Overview: Learners will observe and sort samples of rocks and minerals to compare and contrast their physical properties. They will record their observations in Science Notebooks.

Lesson concepts:

- Earth materials are solid rocks and soils, water, and the gases of the atmosphere.
- Different kinds of rocks have different chemical and physical properties.
- Scientists ask and address questions about the natural world.
- Scientists observe, explore, and discover.
- Scientists work together and share their ideas.

Grade span: K–2

Materials:

- Samples of rocks (such as diorite, granite, pegmatite, peridotite, sandstone) for each group
- Samples of minerals (such as mica, quartz, feldspar, gypsum, hornblende) for each group
- Bags, paper plates or other containers for rocks and minerals for each group
- Hand lens for each student
- Science Notebooks
- Pencils

Advance preparation: Gather rocks and minerals and put them in a bag, paper plate or container for each group.

Time: 30 minutes

Grouping: Small groups and whole class

Vocabulary: rock, mineral, properties, hand lens

Teacher background: A *rock*, in geological parlance, is a naturally-occurring object that contains more than one mineral. An equivalent object that contains just one mineral is called a *mineral*. There are innumerable possible types of rocks because there are many different minerals that are potentially combined in different ways. As one example, granite is a rock that contains mainly quartz, mica, and feldspar. When quartz, mica, or feldspar is found either alone or in combination with other substances, they are referred to as minerals. Many rocks have a number of different minerals contained in them, but the component minerals are not as easily seen as separate inclusions as in granite. For this reason, granite makes an excellent object of study for beginning geologists.

Teaching tips: The groups need to work together and make decisions about how to categorize the rocks and minerals. If students have not previously worked in small groups, you might want to have them work with a partner rather than as a group of three or four. If they are working in groups, have at least enough rocks and minerals for each student to look at one and a few extras so no one has to wait for a rock or mineral.

Procedure:

Whole group

- 1) Hold up one of the rocks and one of the minerals and ask students what they know about the items (don't identify them as a rock or mineral). Record their ideas on a Circle Map or chart.
- 2) Tell students that they will be working in a group and their group will get a collection of items and a hand lens. Ask them to share how to use a hand lens, or if they haven't had experience with a hand lens, demonstrate how to use it. Tell them they will observe one of the items without the hand lens and draw it in their Science Notebook. Then they will look at it with the hand lens and add the details they now can observe. Tell students they will also write their observations of how each item feels. Answer any questions they have about what they are going to do or about this activity.

- 3) Group or pair students, have them get their Science Notebooks, a pencil, and move to the place where they will work. Have the one student from each group (the Materials Manager) get the container of items (rocks and minerals) and the hand lenses for the group.

Small group

- 4) Have students follow the directions (observe, record, observe with hand lens, record details) until they have each observed and recorded information about each item. Have students write any questions they have in their Science Notebooks.
- 5) As groups are finishing their observation and recording, get the class's attention and tell them that each group has another task. They are going to categorize the items into groups that they all agree upon based on their observations. Tell them that their group will share their thinking and their categories during a class discussion.

Wrap-up: Whole group de-brief

- 6) Have students share what they observed and recorded about the items. Ask students to share the similarities and differences they noticed.
- 7) Have each student group share the categories they used to group the items and what their thinking was that helped them make their decisions. After all groups have shared, ask them what they noticed about the way the items were categorized. Tell students that they were using the properties of the items when they grouped them into categories. What properties did they use?
- 8) Tell students that we haven't named the things we've worked with yet and ask if anyone has names for them. Tell students that they are labeled rocks and minerals. Hold up a rock (granite) and a mineral (quartz) and ask students to compare their properties. You might tell them that rocks are made up of more than one type of mineral.
- 9) Have students share any questions they have that they wrote down or they thought of during the discussion/sharing time.

Assessment: Have students write or draw what they learned about rocks and minerals.

Tell students they can also use a Double Bubble Map or a Venn diagram to compare the properties of two items they observed.