

Minerals & Rocks: Introduction to Minerals

Lesson: Explain and Engage - Mineral Identification Basics

Subject/Grade: Earth Science 30, Science/7, and Science/4

Stage 1: Identify Desired Results

Outcome(s)/Indicator(s)

Earth Science 30

ES30-LS1 Examine the processes that lead to the formation of sedimentary, igneous and metamorphic rocks and minerals. [SI]

Indicator(s):

- b) Identify the characteristics geologists use to determine whether an Earth material is a mineral.
- d) Observe and classify mineral samples using standard physical properties (cleavage, fracture, crystal form, hardness, luster, colour, magnetism and streak).

Grade 7 Science

EC7.2 Identify locations and processes used to extract Earth's geological resources and examine the impacts of those locations and processes on society and the environment.

Indicators

- b) Distinguish between rocks and minerals using physical samples, pictures, and/or video recordings and identify the minerals most often found in rocks in Saskatchewan and around the world (e.g., quartz, calcite, feldspar, mica, hornblende).
- c) Classify rocks and minerals based on physical properties such as colour, hardness, cleavage, lustre, and streak.

Grade 4 Science

RM4.1 Investigate physical properties of rocks and minerals, including those found in their local environment. [CP, SI]

Key Understandings: ('I Can' statements)

- I can... explain what a mineral is.
- I can...explain the physical properties of minerals

Essential Questions:

- What is a mineral?
- What are some physical properties of minerals that can be used to identify them?

Teacher Background

In this lesson students learn about what a mineral is and what a mineral is not. Then, students learn which physical properties aid in identifying minerals. The PowerPoint has teacher notes within it. The Bell Ringer can be updated to reflect current Science in the News - focusing on minerals. To make this lesson more interactive use different mineral samples and pass them out to students throughout the lesson. Make sure you get all the samples back. Also, you can bring students up to demonstrate how to test for hardness or how to use a streak plate.

Stage 3: Build Learning Plan

Set (Warm-up, Focusing the Learning): Time: 5 min

Bell Ringer: (five-minute wait time/attendance time)

Show students the first slide on the PowerPoint. What do all of these things have in common?

Think – think about it by yourself and write down your thoughts.

Pair – discuss with the person next to you about what you wrote.

Share – share your response with the rest of the class.

Next Slide – all of the items have talc in them. Talc is used in cosmetics, rubber, paper, and paint. What is talc?

Next Slide – Talc is a mineral.

Development: Time: 45 min

- Proceed with PowerPoint slides introducing what a mineral is. The PowerPoint has note viewer to remind you to ask questions and pass out samples, etc.

Learning Closure: Time: 5 min

Give time for students to come up with one question each and hand it in as an exit slip. Also, on the Exit slip ask a question about one thing they learned.

Brain Buster – If diamond is the hardest mineral, then how was the first diamond mined?



(Malachite - green and Azurite - blue)

Materials/Equipment:

- PowerPoint Presentation
- Student Handout
- Minerals – Biotite with good cleavage, calcite with good cleavage, quartz with conchoidal fracture, another mineral sample showing fracture.
- Exit Slips

Safety Considerations:

- Some samples might be pokey and sharp – use caution when handling samples
- Keep mineral samples away from eyes and mouth
- Do not throw or toss items to anyone
- If something breaks, inform the teacher immediately. They will clean up any spills or broken glass/objects.
- Return all materials and samples

**Possible Adaptations/
Differentiation**

- Use different samples to demonstrate with
- Have students write fill-in the blank notes, or doodle notes
- Combine the PPT and lab lesson, simplify and cover it in one lesson instead of two
- Have students demonstrate how to use the lab materials during the lesson.

Stage 4: Determine Evidence for Assessing Learning

Learners will show they achieved the skills by...

- Informal responses to in class questions and discussions.
- Informal responses to Bell Ringer question and Final Thoughts.
- Informal Exit slip – one thing they learned and one question they still have.

Feedback that students will receive...

- Informal class responses and discussion on trying to identify minerals.
- Going over the questions from the exit slip

Extensions

Look at the GeoExplore Saskatchewan website (this is a digital version of the paper Geological Highway map of Saskatchewan with lots of exciting new material) for further information and a deeper understanding of the local context:

Main Website

<https://skgeolhighwaymap.maps.arcgis.com/apps/MapSeries/index.html?appid=a845cbb370f7401597806887318e2676>

For more background information related to this lesson check out

- Main tab “Geo 101”

Intro Mineral Lesson Exit Slip

Name:

1.) What is one thing that you learned?

2.) What is one question that you have?

Intro Mineral Lesson Exit Slip

Name:

1.) What is one thing that you learned?

2.) What is one question that you have?

Name:

Mineral Introduction



Think About It: Earth's crust is composed of about 3000 minerals. Only 30 of these minerals are very common. Minerals are everywhere. For example, graphite is your pencil lead.

What is a mineral?

1.

2.

3.

4.

5.



Is ice a mineral?



Is water a mineral?



Is plastic a mineral?



Is glass a mineral?



Are the elements on the periodic table minerals?



What are the physical properties of minerals? Make a concept map

Ask Questions, Doodle, Create & Brainstorm

