

EARTH INGREDIENTS

SUMMARY

Students learn how rocks indicate landscape changes over time, how minerals are the building blocks of rocks, and the 3 types of rock. After learning the physical and chemical properties, students use hands-on methods and complete 3 tests to determine the name of 3 unknown minerals.

GRADE LEVEL: 3-6

PROGRAM DURATION: 1 hour

SETTING & ACTIVITY: Classroom; Effective Lecturing, Experimentation

OBJECTIVES: This program uses a classroom lecture along with hand samples and experimentation to provide a hands-on experience. Following the program students should be able to:

- Explain that a rock's mineral composition can indicate in what environment it was formed.
- Clarify the connection between minerals and rocks.
- Describe some chemical and physical differences among 3 minerals.
- Define Sedimentary, Igneous, and Metamorphic rock.

KAS: 4-ESS1-1, 5-PS1-3

FORGING ASSOCIATIONS: The program content can be used as a transition or extension between associated standards. Some examples include:

- 3-LS3-1: Rocks inherit chemical and physical traits from their mineral components as offspring inherit traits from their parents.
- 4-ESS1-1: Just as mineral contents of rocks can indicate their depositional environment, fossils in those rocks provide evidence of ancient organisms.
- 4-ESS3-1: Depositional environments can help explain how and why some natural fuels formed where they did.
- 5-PS1-4: Just as numerous minerals mix to become a rock, the formation of new substances can result when mixing 2 existing substances.
- MS-ESS1-4: This program offers a great introduction/review of rocks for activities to meet this standard.
- MS-ESS2-1: This program offers a great introduction/review of rocks for activities to meet this standard.

COLLABORATIVE PROGRAMS: When paired with the *Guided Cave Tour* or *Immersion Off-trail Tour*, students can put their new-found understanding of geology into practice as they explore the cave surrounded by rocks and minerals discussed in the program. Allowing the students to sluice their own mineral collection is a great addition to this program.

