

INEOS



ASHLAND



**Read all
instructions
before
proceeding**

Rock Cycle

OVERVIEW: This presentation gives a brief discussion of the rock cycle, different types of rocks, and classifying rocks and minerals through different tests

OBJECTIVE: To teach students the rock cycle, different types of rocks, the difference between rocks and minerals, and ways to test and classify rocks and minerals

GRADE LEVEL: 3

OHIO STANDARDS:

3 Earth and Space Science (ESS): Earth's nonliving resources have specific properties

TIME: 45 minutes

VOCABULARY: The rock cycle, Igneous, Metamorphic, Sedimentary, geode
Mineral Identification by: Luster, Color, Streak, Hardness, Breakage Pattern, Specific Gravity, or Effervescence

MATERIALS:

Clay to display the rock cycle
Worksheets
Rock, fossil, and mineral kits
Chart of Moh's Hardness Scale

DEVELOPED BY: Kathy Buescher TIR 2012-2014

PROCEDURE:

LESSON:

Ask students what they know about rocks? They are never created or destroyed they just simply change form.

Minerals – Naturally occurring substance same all the way through, they are solid at room temperature, inorganic (not containing carbon) and crystalline
Rocks are made of one or more minerals.

Discuss 3 different types of rocks

Sedimentary – Particles of sand, shells, pebbles, and other fragments of material. Layers accumulate and become rock. These usually are the only type that contains fossils. Examples are conglomerate and limestone

Metamorphic – Form under the surface of the Earth under intense heat and pressure. Rocks have ribbon like layers and have shiny crystals formed by minerals growing slowly over time on their surface.

Gneiss and Marble are Examples

Igneous – When Magma- molten rock within the Earth- cools and hardens this forms. Sometimes it cools within the earth, and other times it erupts in the form of volcanoes. If it cools quickly it is shiny with no crystals.

Basalt and Obsidian are examples

As stated before, rocks never are created and destroyed, they simply change forms. This happens through a process called the Rock Cycle

STEPS OF THE ROCK CYCLE

1. Core of the earth – Molten iron flows to the outer mantle and cools to become igneous rock (mountains and ocean bed)
2. Eventually igneous rocks work their way to the crust and due to weathering become tiny pieces of sediment
3. When you add pressure it becomes sedimentary rock
4. When sedimentary rock is affected by high heat/pressure it becomes metamorphic
5. When extremely high heat, metamorphic will melt and become igneous

We are using playdoh to describe the rock cycle.

Take the 3 different rolled up balls of sediments. Explain that these are sediments...Pass them around. Have the students feel them.

Now, ask one of the students to smash each color. This is sedimentary rock

Next.....put on top of each other....layered is metamorphic... Discuss properties of metamorphic...ribbon like texture

Last have one of the students knead it all together to make one single color. What type of rock did this become? Igneous

Allow students to dig in the sand to find their rocks and minerals. Next see if we can figure out which is which by looking at the description on the blue handout. Discuss each of the rocks and minerals. As a class, decide if they are metamorphic, igneous, sedimentary, or mineral

Trilobite- Fossil

Agate Slab is sedimentary

Geode – Crystals inside

Obsidian - Igneous

Limestone- Sedimentary

Pyrite- Mineral found in metamorphic and sedimentary rocks

Amethyst- mineral

Polished stones

If time permits, discuss how to classify minerals. Minerals can be identified by Luster: quantity and quality of light reflected

Color

Streak – color of powdered material left when scratched – Show a few examples such as obsidians white streak, pyrite's yellow streak, amethysts white streak

Hardness – resistance to scratching – Show a few examples -

Breakage patterns – Fracture: Leaving an uneven surface

Or Cleavage: Splits on parallel planes

Specific gravity – The ratio of the mass of a solid or liquid to the mass of an equal volume of distilled water....will it float? Some pumice will float

Follow up:

Discuss the rock cycle and different types of rocks. Discuss minerals and the difference between rocks and minerals.

Also, discuss the uses of some rocks and minerals such as granite for buildings and monuments, slate for roofs, chalkboards, and patios, basalt for road building materials



Agate Slab



Pyrite



Limestone



Amethyst



Geode



Trilobite



Polished

Stones



Obsidian