Rocks: Stony Stalwarts: Adapted from: http://science.nationalgeographic.com/science/earth/inside-the-earth/rocks-article/

Photograph by Jim Rich-

Rocks are so common that most of us take them for granted—cursing when we hit them with the garden hoe or taking advantage of them to drive in tent pegs on summer camping trips.

But what exactly *is* a rock?

To geologists, a rock is a natural substance composed of solid crystals of different minerals that have been fused together into a solid lump. The minerals may or may not have been formed at the same time. What matters is that natural processes glued them all together.

There are three basic types of rock: igneous, sedimentary, and metamorphic.

Extremely common in the Earth's crust, **igneous rocks** are volcanic and form from molten material. They include not only lava spewed from volcanoes, but also rocks like granite, which are formed by magma that solidifies far underground.

Typically, granite makes up large parts of all the continents. The seafloor is formed of a dark lava called basalt, the most common volcanic rock. Basalt is also found in volcanic lava flows, such as those in Hawaii, Iceland, and large parts of the U.S. Northwest.

Granite rocks can be very old. Some granite, in Australia, is believed to be more than four billion years old, although when rocks get that old, they've been altered enough by geological forces that it's hard to classify them.

Sedimentary rocks are formed from eroded fragments of other rocks or even from the remains of plants or animals. The fragments accumulate in low-lying areas—lakes, oceans, and deserts—and then are compressed back into rock by the weight of overlying materials. Sandstone is formed from sand, mudstone from mud, and limestone from seashells, diatoms, or bonelike minerals precipitating out of calcium-rich water.

Fossils are most frequently found in sedimentary rock, which comes in layers, called strata.

Metamorphic rocks are sedimentary or igneous rocks that have been transformed by pressure, heat, or the intrusion of fluids. The heat may come from nearby magma or hot water intruding via hot springs. It can also come from subduction, when tectonic forces draw rocks deep beneath the Earth's surface.

Marble is metamorphosed limestone, quartzite is metamorphosed sandstone, and gneiss, another common metamorphic rock, sometimes begins as granite.

Read It!

1.

What are the three main types of rocks?

Read It!

2.

What type of rock is formed from lava or magma?

Read It!

3.

What kind of rock most frequently contains fossils?

Read It!

4.

What kind of rock is formed when existing rock is under extreme heat or pressure?

1.

Watch It!

Watch the Geology Kitchen here:
http://tinyurl.com/hjk4egp

1. Click Play on the video.
2. Answer questions from

Cards #2-4 on your lab sheet.

2.

Watch It!

Describe how an igneous rock is made.

3.

Watch It!

Describe how a sedimentary rock is made.

4.

Watch It!

Describe how a metamorphic rock is made.

Explore It!

1. **Go to the following site:**

http://tinyurl.com/ou9e3px

Explore It!

2.

Discover rock secrets through these activities. Create a rock collection as you learn about the three main types of rock, find out how to tell the different rock types apart, and see how rocks change from one type into another!

Begin with **Types of Rocks**

Read the info then click on

Next: Start your rock collection

Explore It!

3.

As you collect your rocks, pay attention to what they are called and at the end, what kind of rock they are. READ THE DESCRIPTIONS Then move on to

Identify Rock Types
See if you can recognize rock characteristics and types.

Explore It!

4.

Watch how the different types of rock are formed. Record your answers on your lab sheet.

Assess It!

1.

Which type of rock is created by the slow cooling of magma under the Earth's surface?

A. intrusive igneous rock

B. Extrusive igneous rock

C. Metamorphic rock

D. Sedimentary rock

Assess It!

2.

Which characteristic is found in sedimentary rock?

A. Crystals

B. Fossils

C. Glassy surface

D. Gas bubbles

Assess It!

3.

Which type of characteristic is common to extrusive igneous rock?

A. Crystals

B. Fossils

C. Glassy surface

D. Ribbonlike Layers

Assess It!

4.

Stone mountain is carved from granite, so is Mount Rushmore. What kind of rock is granite?

A. Sedimentary rock

B. igneous rock

C. Metamorphic rock

D. None of the above

Assess It!

5.

Which of the following is NOT one of the 3 major classes of rocks:

A. Sedimentary rock

B. igneous rock

C. Metamorphic rock

D. Oceanic rock

Assess It!

6.

Identify the processes that can turn magma into granite, granite into sand and then sand into sandstone:

A. weathering & erosion, compacting & cementing, cooling

B. Cooling, weathering & erosion, compacting & cementing,

C. Melting, heat and pressure, cooling

Assess It!

7.

Heat and pressure are the key to forming this kind of rock:

A. Sedimentary rock

B. igneous rock

C. Metamorphic rock

D. Oceanic rock

Assess It!

8.

Weathering and erosion:

A. glue sediments together to form sedimentary rock

B. Break existing rocks into sediment

C. Melt existing rocks into magma

D. Form extrusive igneous rock

Research It!

1. Using the internet, find out what specific kind of rock makes up most of Earth's crust. What type of rock is this?

Illustrate It!

Draw a visual representation to remind you about each type of rock.

Write It!

1. What kind of rock is your favorite? Tell me about it, explain why.

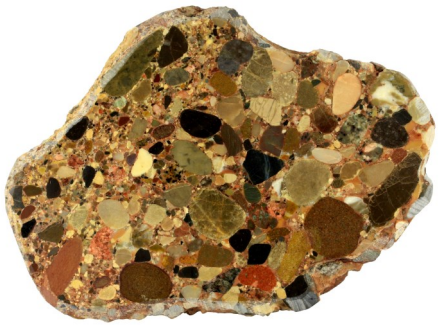
Write It!

2. What is the difference between intrusive and extrusive igneous rock? Either write a paragraph or create a double-bubble map.

Igneous Rock

Sedimentary Rock

Metamorphic Rock

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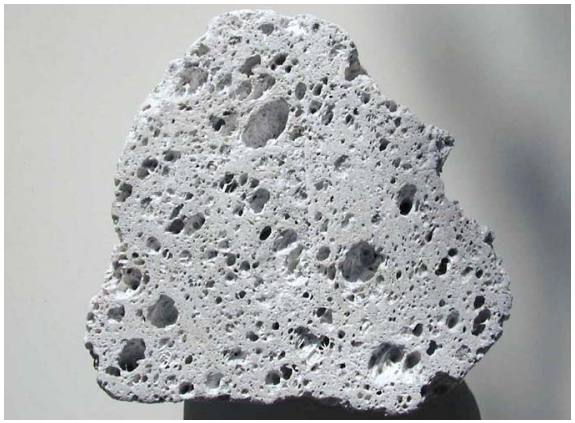


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Name:_____ Class:_____ Date:_____

Input Stations

Explore It!

Task Card 3: What was your score? _____

Task Card 4:

1. Heat and pressure turned _____ rock into _____rock.

2. Melting rock turned _____rock into _____.

3. Quickly cooling rock turned _____ into _____ _____rock.

4. Slowly cooling rock turned _____ into _____ _____rock.

5. Weathering and erosion form _____.

6. During compacting and cementing, sediment is pushed together to form _____ rock.

Read it!

1.

2.

3.

4.

Watch It!

View the Video and answer questions on task cards 2-4.

Task Card 2:

Task Card 3:

Task Card 4:

Research It!

Task Card 1:

Output Stations

Write It!

Task Card 1:

Task Card 2:

Igneous

Sedimentary

Output Stations Continued

Illustrate It!

Metamorphic

Assess It!

1. _____ **5.** _____

2. _____ **6.** _____

3. _____ **7.** _____

4. _____ **8.** _____

Organize It!

Teacher Initials:

Reflection: How did you do? What did you find easy? What mistakes did you make?