

Title: Homemade Stone Properties

The students will study the properties of stone

Materials needed:

For Activity 4:

grid paper
magnifying glass
tape measure or ruler
small scale
homemade stone

For Activity 5:

paper plates
nail
homemade stones
paper cups
1 cup vinegar
eyedroppers
penny
glass - call window glass shop for samples



*****HOMEMADE STONES SHOULD BE MADE 1 WEEK BEFORE THIS ACTIVITY**

Studying the Properties of Stone

Geologists study earth materials called stones. Geologists have discovered over 200 different kinds of stone that form the earth's crust. Different stones are useful for different things as aggregates. Before large amounts of money are spent on a gravel pit, the rocks in it will be tested to see if they are the right kind - can they be sold for enough money to make profit after the expense of extracting it.

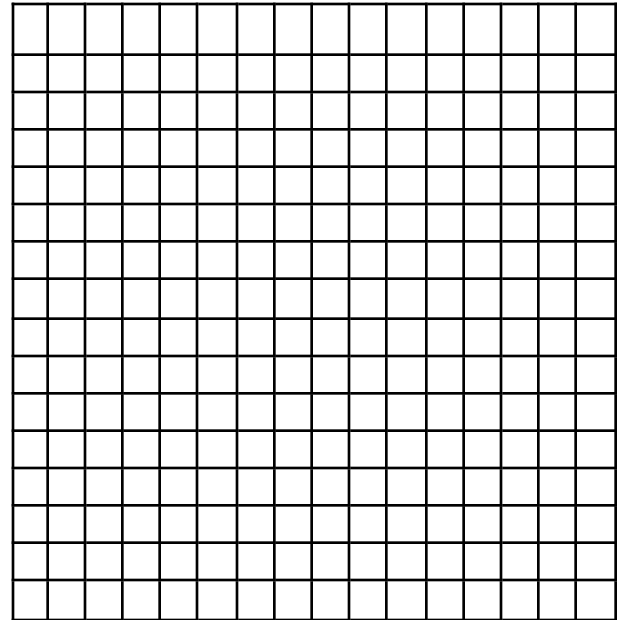
One of the challenges a geologist faces is to determine the ingredients in different kinds of stone. Many earth materials combine to make stone, just as the ingredients you have in your kitchen can be combined to make cookies. Once a geologist knows a stone's ingredients, he or she can generate ideas about the origins of the stone.

After making observations of the whole stone, a geologist physically breaks the sample apart into its different components. To make more detailed observations of the stone materials, the geologist may take it back to a lab where other equipment is available to perform chemical tests on the stone. These tests provide more clues to the identity of the materials and evidence about how the stone was formed. Geologists observe the properties of stone. A property is something you can observe about an object, such as color, shape, and texture.

****** the following activities use the home made stones but could be done with stones the students find also ...**



Activity Number 4: Physical properties of stone



- Trace the homemade stone onto the grid paper. Each grid is 5 mm x 5 mm (.5 cm x .5 cm)
- Diameter - distance across the stone _____
- Circumference - distance around the stone _____
- Depth - distance through the object _____
- Weight of the rock - _____

Using the magnifying class and by just looking at the stone, have the students write down as much as they can about the stone's properties.

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- Measurement ____/5 Description ____/5 total ____/10
- A = 9/10 _____ B = 8 _____ C+ = 7 _____ C = 6 _____ C- = 5 _____



Activity 5: Real stones are made of up different components. 30 minutes

- Break the homemade stones in half or into pieces.
- Use the nail as a type of geologist's tool to take the stone apart.
- Students should separate the ingredients into paper cups.
- Students should write down the different ingredients they find.

Evaluate your rock with these criteria. Check off the correct descriptors.

Smell

- Earthy Sour
- Sweet Rotten Egg

Luster

- Glassy/vitreous**shines like glass
- Earthy/chalky**.....dull
- Metallic**.....looks like metal
- Waxy/Silky/Pearly**....has a muted shine

Chemical

Fizzes with vinegar yes no

Magnetic

Attracted to a magnet yes no

Color

- Red blue gray green
- brown black yellow

Streak

Color of the mineral when it is scratched against a streak plate (unglazed porcelain tile - local tile shop)

Feel ...Texture of the mineral

- Gritty**..Sandy **Sharp**..Metallic
- Powdery**..Earthy or Chalky
- Smooth**..Glass
- Smooth/Sticky**..Waxy

Hardness - Moh's Scale of Hardness

when scratched by

- 1
- 2 Fingernail
- 3
- 4 Penny
- 5 Steel(knife blade)
- 6 Glass
- 7-10 Mineral will scratch steel/glass

Weight

How heavy does it feel for its size?

- light average heavy

Homemade Stones

You will need:

1 cup white flour
1/2 cup salt
2 tsp alum
1/2 cup water
5 drops red food coloring
5 drops blue food coloring
3 drops yellow food coloring
1 cup coarse sand
1/2 cup gravel (2 colors – could use aquarium gravel)
1/8 cup oyster shells (really anything else could be added)

Please have an adult's supervision for this activity. Students should make Homemade Stones about 1 week in advance of this lesson.

Mix the flour, salt and alum together in a large zip bag.

Add the water and food coloring. Knead the mixture until it is uniform in color and texture and no longer sticks to the sides of the bag. If needed, add more water if the dough is too crumbly.

Add the sand and the gravel mixture. Knead.

Divide the mixture into 18 ping pong size balls. Place the stone ball in your hand and with your thumb make a depression, sprinkle in oyster shells, then mold the dough around them.

Flatten the stone. Put them on the plate to dry. Turn every day until dry. Do not microwave or oven bake the stones -- they will get too hard.

If they get too hard, sprinkle them with water and let them sit awhile before using them.