How to Identify a Rock or Mineral

Streak Test:

When a mineral is rubbed firmly across an unglazed tile of white porcelain (a streak plate), it leaves a line of powder, called the streak. The color of the streak varies from mineral to mineral. However, different colored samples of the same mineral always leave the same color streak.
For example, violet, pink and brown quartz all leave a white streak.

TRY IT:

1. Rub your rock samples firmly across a white streak plate.
2. Record the color of the streak on your identification notebook page.
3. Rub your rock samples firmly across a black streak plate.
4. Does the streak show up better?
5. Is the streak the same color as the rock?
6. Record results on your identification notebook page.

Hardness:

A mineral's hardness can be measured through the ability of a harder material to scratch a softer material. For example, Talc is so soft you can scratch it with your fingernail. A diamond is so hard it will scratch all other materials. The Mohs' hardness scale places ten common minerals on a scale from one to ten. One is the softest, ten is the hardest.

1	2	3	4	5	6	7	8	9	10
Talc	Gypsum	Calcite	Fluorite	Apatite	Feldspar	Quartz	Topaz	Corundum	Diamond

TRY IT:

1. Use the tools at this station and the charts shown here to determine the hardness of your samples.

Object	Fingernail	Penny	Glass	Nail	Emory Cloth
Hardness	2.5	3.5	5.5	6.5	8.5

Ex: If an unknown sample cannot be scratched by your fingernail (2.5), but can be scratched by a penny (3.5), then it's hardness is between 2.5 and 3.5.

2. Record the hardness of your samples in your identification notebook.

Mohs Hardness Scale

Hardness	Meaning
1	Softest known mineral - it flakes easily when scratched by a fingernail.
2	A fingernail can easily scratch it.
3	A fingernail cannot scratch it, but a copper penny can.
4	A steel nail can easily scratch it.
5	A steel nail can scratch it.
6	Cannot be scratched by a steel nail, but it can scratch glass.
7	Can scratch steel and glass easily.
8	Can scratch quartz.
9	Can scratch topaz.
10	Hardest known mineral. Diamond can scratch all other substances.

Try a hardness test on your rock samples

- Can you scratch them with different items?
- Which items will scratch them and which will not?
- Can you crumble them?
- Can you put them in order from the softest to the hardest?

What will hardness tell you?

Sedimentary rocks are usually a lot softer than igneous and metamorphic rocks

The Hardness Test

Our Results

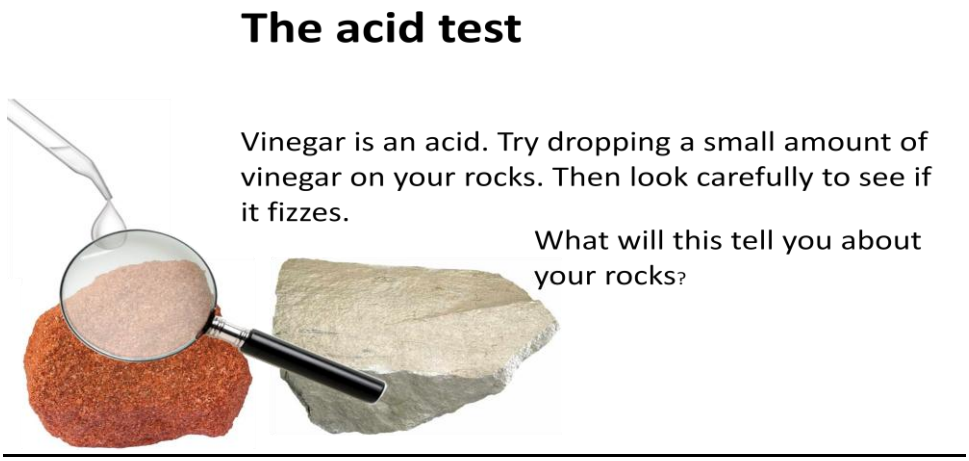
Rock Sample	Chalk	Granite	Limestone	Slate	Sandstone	Marble	
Observations							
Rank order of rocks for hardness (1 for the softest rock, 2 for the 2nd softest and so on)							
What type of rock might it be?							

Chemical Properties:

Rocks and minerals are made of different compounds that will react in predictable ways that can help identify them.

TRY IT:

1. Sample reacts by “fizzing”, that fizz is sample is a carbonate mineral.
2. Look at your sample under a black light (in the dark). Does it glow?
3. Leaving your sample in the dark, turn off the black light.
   Does your sample continue to glow?
4. Record all observations in your identification notebook.



Magnetism:

If a mineral is magnetic, a magnet will stick to the mineral. Magnetism is caused by the presence of iron and is useful in identifying iron oxides.

TRY IT:

1. Place your sample near a magnet. Do they attract?
2. Try to pick up a paper clip with your sample. Does it work?
3. Record your results in your identification notebook.

Optical Properties:

We can identify some materials by looking at how they interact with light. Different materials also "bend" light differently. This is called refraction. A mineral is sometimes characterized by its luster. Luster refers to how much light the sample reflects.

TRY IT:

1. Hold your sample up to the light. It is transparent if you can see through it. It is translucent if light can get through, but you can't see through it. It is opaque if no light can get through it.
2. Record on your identification notebook page whether your sample is opaque, translucent or transparent.

TRY IT:

1. If you sample is transparent, place it on the print samples provided.
2. Record any observations in your identification notebook.

A mineral is sometimes characterized by its luster. Luster refers to how much light the sample reflects.

TRY IT:

1. Shine the flashlight on your sample. Does it reflect a lot of light (i.e. is it shiny)? Or is the surface of your sample dull?
2. Record observations in your identification notebook.

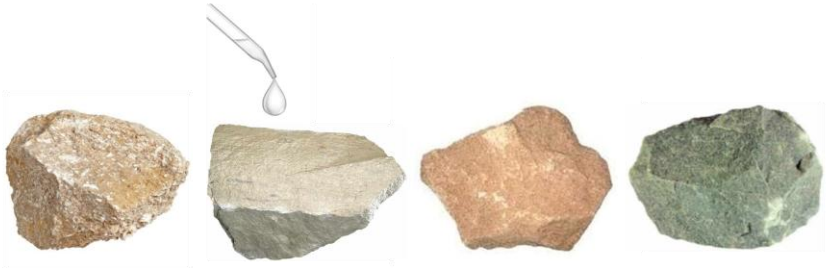
The Water Test

How did you make it fair?

Which rocks were permeable?

Which rocks were impermeable?

Will water soak into it?



Try dropping a small amount of water on your rock samples and watch to see if it soaks in