

P1

Today we are going to talk about rocks and minerals and their uses in the ancient world.

P2

Rocks

- Solid inorganic materials made up of minerals
- Three kinds based on how they formed:
  - Igneous
  - Sedimentary
  - Metamorphic

Minerals

- Solid chemical or combination of elements
- Can be divided up into categories by the main elements they are made of (silicates, carbonates, etc.)

Rocks are solid inorganic materials found naturally in the earth and are made up of minerals. Rocks can be divided into three categories based on how they were formed. Igneous rocks are formed from magma at or below the earth's surface. Sedimentary rocks are formed near the earth's surface from the weathering, transportation, or re-deposition of pre-existing rocks and can include fossils. Metamorphic rocks form when igneous or sedimentary rocks undergo a large amount of pressure and or very high temperature. Minerals are made of a single chemical or combination of elements. They can be divided into categories by their main elements like carbon, silica, or sulfur.

P3

Where do we get rocks and minerals?

Where do we find rocks and minerals?

Naturally occurring formations and deposits determine where rocks and minerals are found.

We can find granite right here in Atlanta while famous Carrara marble comes all the way from Italy. In antiquity, rocks and minerals were traded by societies, much like they are now, but it was slower and harder to transport them. This made it very expensive to use materials that were not found locally.

Today because of modern technology, we can easily get rocks and minerals from almost anywhere in the world.

P4

How do we use rocks and minerals?

How does our society today use rocks and minerals?

Rocks and minerals can be found in so many things in our modern society. We use them to build, to make art, and to make jewelry. Minerals can even be found in plaster and in electronics like cell phones and TVs.

P5

How did the Ancient World Use Rocks and Minerals?

Ancient societies also used rocks and minerals for many things. Just like us, they used rocks and minerals to build and to create art and jewelry. They also used them to make tools and paint. At the Carlos Museum, you can find objects made from a variety of rocks and minerals from all over the ancient world!

P6

How Do We Identify Rocks and Minerals?

Rocks and minerals can easily be grouped by their many physical and chemical properties. In this activity, the properties being observed are color, texture, luster, hardness, and streak. The color, texture, and luster all help to describe the appearance of a rock or mineral. The rock or mineral could be one color or have stripes, swirls, and spots of different colors. The texture of a rock or mineral can be smooth, rough, or both at the same time. The luster of a rock or mineral can be shiny like a diamond, dull like a plain pebble, or both. The hardness of a rock or mineral is recorded using something called the Mohs scale. This is a scale from 1-10 that tells us how hard to scratch a material is with 1 being the easiest to scratch and 10 being the hardest to scratch. An example of something with a Mohs hardness of 10 is a diamond. Because they are so hard, diamonds can be used to cut many things like glass (Mohs hardness of 5.5) or even titanium (Mohs hardness of 6). An example of something soft would be chalk, which has a Mohs hardness of 1. This means chalk can be scratched by many things including our fingernail, which have a hardness of 2.5. The streak tells us what color a rock or mineral will be in powder form. We can measure this by dragging a rock or mineral across a ceramic tile. Some streak colors may surprise you! Take a moment to answer question 1 on your worksheet.

P7

- Each group will be assigned an ancient job (builder, sculptor, jeweler, toolmaker, or painter)
- Working in your groups, record your observations about the ten rocks and minerals provided
- Choose the two rocks or minerals you think are best for your job
  - Use your observations as evidence for your answer

Now that we have seen examples of rocks and minerals used in the ancient world and how to identify their properties, it's up to you now to investigate which properties of rocks and minerals are important for their different uses. How important is the hardness of a rock to a sculptor? What about to a toolmaker? When is the color of a rock or mineral important? In your groups you will be assigned an ancient job. You will observe the properties of each rock or mineral and record those observations in your worksheet (#2 on worksheet). Once you have examined all ten rocks and minerals, choose which two you would use for your ancient job (#3-5 on worksheet). Make sure you have good evidence for your decision!

P8

Have each group announce to the class which rocks or minerals they chose and explain why using the properties they observed.

P9

Have each group announce to the class which rocks or minerals they chose and explain why. Discuss that there is overlap and if they chose any of the two in each category, they are correct.

P10

Here are some examples of sandstone, limestone, and alabaster objects from the Carlos Museum. As you can see, both sandstone and limestone can be used by builders or sculptors while alabaster is mostly used for sculpture.

P11

Here are some examples of granite, obsidian, and basalt objects from the Carlos Museum. Granite can be used for sculptures or for building while obsidian and basalt are mostly used for tools. The hardness of basalt makes it great for axes (left) or for grinding up ancient grains (metate on the right).

P12

Here are some examples of carnelian, amethyst, and a variety of pigments from the Carlos Museum Collection. The color and luster of carnelian and amethyst make for beautiful jewelry while colorful minerals such as hematite and malachite were used by ancient artists to paint beautiful scenes.