Cycle 1 Week 21 –

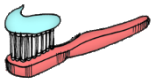
MINERALS

Introduction

-Do you remember when we discussed crystals? Well this week we will discuss another type of crystal – **MINERALS**!

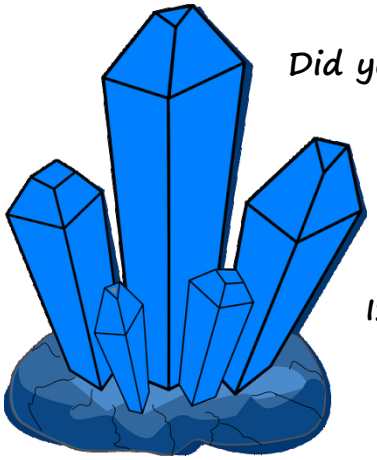
-Can you give me some examples of minerals? What did we use in our experiment last week? Borax! That's a mineral. (examples: Iron, graphite, aluminum, copper, gold, lead, mica)

-Where do we see minerals around us?

- The graphite at the end of your pencil is a mineral. 
- You can find limestone and aluminum oxide in some toothpastes. 
- Our pennies are made of copper, which is a mineral. 
- The mineral, Feldspar, is used in glass and pottery – so it must be very strong! 
- Gold is a very precious mineral – what can gold be used for? 

<u>The definition of a mineral is</u>: an <u>inorganic</u> (not living) element or that is <u>naturally</u> formed and has a particular chemical composition, crystal structure, and physical properties.

- Is a cow a mineral? (No! Animals are living!)
- Is a tree a mineral? (No! Plants are living!)
- Is a house a mineral? (No! Houses are not naturally formed, they are built by people!)
- Are YOU a mineral? (No! We are living!)



Did you know that minerals are crystals?!

-What was the major characteristic of a crystal? (its atoms are built together in a **<u>repeating</u>** pattern). If a mineral is allowed to "grow" by itself, it will have a "crystal" or repeating pattern to it. So a **mineral** IS a **crystal**! (A mineral does <u>not</u> have to be clear to be a crystal)

Geologist Detectives!

-What is the name of a person who studies minerals and rocks? A ***geologist***!

-We are going to be geologists for the next few weeks. First, we need to know what to look for when we find and study minerals.

-I went on a big mineral expedition and I found these two minerals (pick two that look similar). Can you think of any ways I can try to tell them apart and know what kind of minerals I found? (let them look at the minerals and brainstorm ideas)

-That is an excellent start! Fortunately, the geologists and scientists that lived a long time ago created 4 tests that we can use to find out what kind of minerals these are.

4 MINERAL TESTS

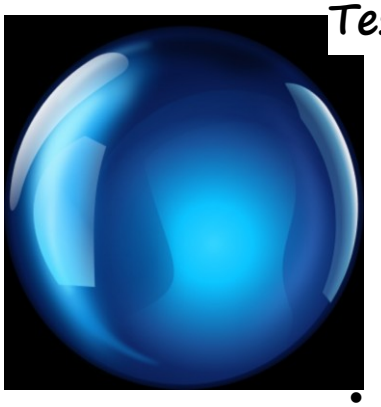
Test #1: Streak Test

(the kids will be trying these tests on week 22 – right now, demonstrate)

-Here I have a mineral, and a porcelain tile. If I take my mineral and rub it along the back of this tile, I can see what color powder it leaves behind. The color of the powder is more reliable than looking at the color we see on the outside of the mineral. This is called a **Streak Test.**

-What color powder did my two minerals leave behind?

WE JUST FOUND OUR FIRST CLUE!



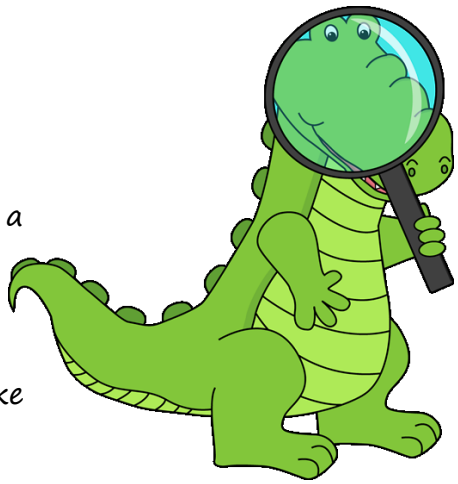
Test #2: Luster Test

-**Luster** is a word that tells us how light is reflected off of something. There are 3 types of "luster" on a mineral.

- **Glassy**- minerals that reflect light, similar to a glass window.
- **Metallic**- reflect light similar to a metal surface.
- **Dull**- mineral that does not reflect light or reflects it poorly.

-What is the **luster** of these minerals? WE JUST FOUND OUR SECOND CLUE!

Test #3: Transparency



-Here are three words we need to know for our Transparency Test:

- **Opaque**- mineral that allows **NO** light to pass through it (like a wall)
- **Transparent**- mineral that allows enough light to pass through it so that an object may be seen on the other side (like a window)
- **Translucent**- mineral allows some light to pass through it, but not enough for an object to be seen on the other side (like a foggy window)
  (Using the flashlight, demonstrate these three transparencies – you could use black construction paper, wax or plain paper, & Saran wrap.)

-What is the **transparency** of my minerals? **WE JUST FOUND OUR THIRD CLUE!**

Test #4: Hardness

-We have one final test we need to do on our mineral.

That is a **Hardness Test**. What do you think we will be looking at for this last test? Hardness! That's right! The hardness of a mineral tells us how strong it is against other minerals!

-Did you know there is a scale that a scientist developed in 1812 to compare the hardness of minerals? It was created by Frederick Mohs – and it is called the "Mohs Scale"! Why do you think it's called that? ☺

-The scale goes from 1 to 10. A "1" on the scale means the mineral is very soft. A "10" on the scale means it is as hard as it can be.

-Here is a piece of glass, and a steel nail. Let's see what my mystery minerals do if I try to scratch the glass with it. Did it leave a mark? What if I rub the nail on the mineral – did it make a scratch? **WE JUST FOUND OUR FOURTH CLUE!**

Conclusion - Next week we will use these tests together and you will get to test out your own minerals! What were the 4 tests we used? **(Streak, Luster, Transparency, Hardness)**