Rock cycle activity

**Goal-** To investigate the processes by which rocks are formed and broken down, and to see how rocks can change over time.

**Materials-**

\*crayons (a different color for each person of group) \*paper towels

\*sharpener/plastic knife/coin \*1 wood block

\*aluminum foil rectangle \*hot plate (teacher uses)

**Part 1--Weathering**

1. In nature, rocks are broken down by the forces of nature. Weathered by wind, sun, ice, or rain causes rocks to break down into smaller pieces or sediments.
2. Weather you rock. In other words, each lab partner uses a sharpener/plastic knife/coin to shave a crayon into small pieces. Collect the shavings in **separate** piles on a paper towel. Be as neat as you can!
3. Answer the questions about this section in your lab report **BEFORE YOU MOVE ON!!!!**

**Part 11-Erosion**

1. Once sediments have been created, they are usually moved by wind, water, gravity, etc. (EROSION) and dropped in a new location (DEPOSITION). Here you will act as a depositional force.
2. Each lab partner, in turn, should move (erode) and lay down (deposition) the rock fragments in a neat pile in the center of the aluminum foil. Set each new pile on top of the previous ones. A layer of red, a layer of blue, and a layer of green for example. The layers should be about a 2 inch by 2 inch square and **LEVEL**. When you are done you should have 3 layers in a rectangular shape.
3. Answer the questions about this section in your lab report **BEFORE YOU MOVE ON!!!!**

**PART 111-Compaction/Cementation**

1. This part of the simulation requires you to understand the cementation process. Spaces between the fragments are **reduced in size by pressure** (COMPACTION) and **filled in with cementing agents** (CEMENTATION)**.** This lab will **NOT** add cementing agents. It will **ONLY** simulate compaction. The compaction process occurs as sediment layers are continually covered by new layers of sediments. The lower layers become compacted by the weight of the new layers as above.
2. **Carefully** fold over the one side of the aluminum rectangle onto your arranged crayon layers. Make it like a little packet. Don’t go nuts folding over all of the foil edges because you’re going to be opening this back up in a minute! BUT you do not want your layers to shift nor do you want any shavings coming out the sides.
3. Carefully place your packet of layered sediments between a block of wood and the table. Now compact your layers by pressing on top of the block.
4. WHen you feel you’ve compacted it as much as you can, slowly and carefully open your packet. Don’t try to pick up your rock! It did **NOT** cement together, remember!
5. Answer the questions about this section in lab report **BEFORE YOU MOVE ON!!!!**

**PART 1V-Heat and Pressure**

1. As the pressure deep within the earth increases, the temperatures increase as well. A temperature change is probably occurring in this activity. Metamorphic rock may become contorted in appearance and actually flow like a plastic material--in response to the HEAT and PRESSURE that is caused by the over-riding rock.
2. Rewrap the loosely compacted, sedimentary rock-type crayon shavings in the aluminum foil.
3. Take your rock to the teacher, so she/he can apply some heat.
4. Then you may go back to your lab table and apply more pressure using your blocks of wood.
5. When you think you have applied enough pressure, carefully open your packet.
6. Answer the questions about this section in your lab report **BEFORE YOU MOVE ON!!!**

**PART V-Melting and Cooling of Rock**

1. Igneous rocks form from magma or lava when it cools.
2. Make a boat out of your aluminum foil with a flat bottom and sides
3. Take your remaining “metamorphic” rock you the teacher at the front of the classroom.
4. The teacher will then demonstrate the melting and cooling process that forms igneous rock.
5. Answer the questions about this section in your lab report!

**NAME\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**ROCK CYCLE CRAYON LAB REPORT**

**Part 1-Weathering**

1. When you weathered the crayon, were the shavings the same size or shape as before? Why or why not?

2. Identify 3 weathering agents (natural ways to weather a rock).

**Part 11-Erosion and Deposition**

1. DESCRIBE the shape and size of spaces between your rock (crayon) pieces. Are they large or small and irregular shaped?

2. Identify 3 erosions agents.

**Part 111- Compaction/Cementation**

1. DESCRIBE the compaction. Are the sediments tightly or loosely compacted?

2. Which type of rock is formed after all these processes (weathering, erosion, deposition, compaction and cementation) have occurred?

**Part 1V- Heat and Pressure**

1. DESCRIBE what your rock looks like.

2. In nature, what is causing the increase in temperature and pressure?

3. What type of rock is formed after heat and pressure?

**Part V- Melting and Cooling**

1. DESCRIBE what the melted rock looks like.

2. What is melted rock called?

3. Describe what the cooled rock looks like.

4. What type of rock is formed after melting and cooling?