Disappearing Rocks

Objective

You will see how rocks can change through physical and chemical weathering creating passageways and caves.

Materials

- White table vinegar
- Squeeze droppers or straws
- Sample of rocks, including one limestone
- Containers

Steps

1. Chart and describe the characteristics of the rocks (appearance, hardness, color, texture, solubility). Solubility is like adding Jello mix to hot water and dissolving into a solution.
2. Most caves are formed in limestone areas. Limestone is unique because its mineral grains can be dissolved in nature by carbonic acid. The weak acid forms from a mixture of water from rain and carbon dioxide from the air and soil. When the carbonic acid comes in contact with calcite, it dissolves small amounts of the calcite and carries it away in a solution through cracks and pores in the rock, carving a bigger opening. Over a very long time, these holes can create caves.
3. One of the samples is limestone. How can we determine which one it is?
4. The Bubble Test!
    a. The samples with calcite will bubble!
    b. Apply drops of vinegar on the samples.
    c. Which rock is limestone- how do you know?

Conclusion

- THINK ABOUT THIS! What would happen if a limestone layer of rock is sandwiched between harder rock layers that don't dissolve?
- How does chemical weathering break down?
- How does a cave form in limestone?

Name _____ Date _____

Disappearing Rocks 

Introduction

Most caves are formed in limestone areas. Limestone is unique because its mineral grains can be dissolved in nature by carbonic acid. The weak acid forms from a mixture of water from the rain and carbon dioxide from the air and the soil. When the carbonic acid comes in contact with calcite, it dissolves small amounts of the calcite and carries it away in a solution through cracks and pores in the rock, carving a bigger opening. Over a very long time, these holes can create caves.

Limestone: gray sedimentary rock made of calcium carbonate. It is the ancient sediments left behind in bodies of water and often contains fossils. When carbonic acid dissolves this rock, caves are formed.

Erode - to wear away

Erosion - removal of rocks and dirt by wind, water and ice.

Weathering - the process of breaking down rock and other materials into smaller pieces.

Materials

- White table vinegar
- Squeeze droppers or straws
- Sample of rocks, including one limestone
- Containers
- Scratch Plates

Procedures

1. Chart and describe the characteristics of the rocks. Solubility is like adding jello mix to hot water and the mix dissolving into a solution.

	Appearance	Hardness	Color	Texture	Solubility
Rock #1					
Rock #2					
Rock #3					
Rock #4					
Rock #5					

2. Circle the most correct answer in the parenthesis. Most caves are formed in (limestone/granite) areas. This rock is unique because its mineral grains can be dissolved in nature by a carbonic acid. The weak acid forms from a mixture of water from the (rain/ground) and carbon dioxide from the air and soil. When the carbonic acid comes in contact with calcite, it (dissolves/builds up) small amounts of the calcite and carries it away in a solution through cracks and pores in the rock, leaving behind a bigger opening, eventually these holes can create caves.
3. One of the samples is limestone. Which one do you think it is? _____
4. How can we determine which one it is?

   _____

   _____

5. Test each sample with vinegar.
6. What do you think the vinegar will do to the rocks?

   _____

   _____

7. If the rocks have calcite in them, what reaction will happen that will make them different from the other rocks?

   _____

   _____

8. Record what happened to the rock samples.

Rock #1	
Rock #2	
Rock #3	
Rock #4	
Rock #5	

9. Which rock is limestone- how do you know?

_____

_____

10. Think about this! What would happen if a layer of limestone rock is sandwiched between harder rock layers that don't dissolve?

_____

_____

11. How does chemical weathering break down the rocks? Describe the process in your own words.

_____

_____

12. Explain why caves are most commonly formed in limestone rock.

_____

_____