Weathering, Erosion, & Deposition Lab Packet

Name _____

Hour _____

Grade _____/70

The entire packet is due on Friday, November 1. If you are absent, you will have to find time to make up the labs. You MUST use R.A.C.E.S. when answering. If you do not know how to answer in R.A.C.E.S. format, you will need to see me for instruction. Make sure to USE the prompts. If you run out of space, attach a loose-leaf piece of paper and LABEL the lab that you are continuing to answer. If you lose your packet, you will have to print another from my website. This grade equals a test grade!

Station: Copper-Bearing Rocks

How does acid rain affect copper-bearing rocks?

At this lab station you will investigate how acid rain effects copper-bearing rocks. To model acid rain, you will use vinegar with a little salt added. To model copper-bearing rocks, you will use pennies which contain small amounts of copper.

Materials:

- Penny
- Cup
- 1 teaspoon of salt
- Vinegar
- Plastic spoon
- Paper Towel
- Sharpie

Procedure:

Day 1

1. Get a clear plastic cup and write your name on it.
2. Place one penny in the clear cup.
3. Label "Acid Rain," sprinkle 1 teaspoon of salt over the penny and then add vinegar to cover the penny. Do **NOT** fill the cup.
4. Set the cup aside for one day.

Day 2

5. Use a spoon to take the penny out of the beaker to get a closer look and place on a paper towel.
6. Record notes.
7. Put the remaining vinegar in the "waste" bucket.
8. Throw away the cup.
9. Please do NOT throw away the spoon.

*****Place for notes and questions on the back.**

Notes:

R.A.C.E.S.=5 Points

How might acid rain alter copper-bearing rocks? Use one of the following terms correctly: erosion, chemical weathering, mechanical weathering, or deposition with explaining how it alters the rocks. Must answer using R.A.C.E.S. (use cheat sheet) and you may also use your notes or book to help with definition, evidence, etc.

What two spheres are interacting in this lab? (2 Points)

Station: Iron Rocks

How does water affect iron-bearing rocks?

At this lab station you will investigate how water affects iron-bearing rocks. To model iron-bearing rocks you will use pieces of iron wool. Iron wool contains iron just like iron-bearing rocks.

Materials:

- Super-fine iron wool
- Water
- Cup
- Paper towels
- Sharpie

Procedure:

Day One:

1. Take a clear plastic cup and place name on the outside.
2. Put a small clump of iron wool in a cup and cover it with water.
3. Set aside for 24 hours.

Day Two:

4. Remove the iron wool and place on a paper towel.
5. Record notes.
6. Throw the iron wool in the trash.
7. Dump the remaining water in the "waste" bucket.
8. Throw away cup.

*****Place for notes and questions on the back.**

Notes:

How might water affect iron-bearing rocks? Use one of the following terms correctly: erosion, chemical weathering, mechanical weathering, or deposition with explaining how it alters the rocks. Must answer using R.A.C.E.S. (use cheat sheet) and you may also use your notes or book to help with definition, evidence, etc.

What two spheres are interacting in this lab? (2 Points)

Station: Carbonate Rocks

How does water affect carbonate rocks?

At this lab station you will investigate how water affects carbonate rocks. To model this you will use antacid tablets that contain carbonates.

Materials:

- 2 antacid tablets
- Small beaker
- Water
- Plastic spoon
- Clock
- Paper Towel

Procedure:

1. Place one tablet in a small beaker and cover it with water.
2. After 3 minutes, use the spoon to remove the tablet and place on a paper towel.
3. Record notes.
4. When finished, make sure you put the water back into the container and throw away the used antacid tablet.
5. Please do NOT throw away the spoon.

*****Place for notes and questions on the back.**

Notes:

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How might water alter carbonate rocks? Use one of the following terms correctly: erosion, chemical weathering, mechanical weathering, or deposition with explaining how it alters the rocks. Must answer using R.A.C.E.S. (use cheat sheet) and you may also use your notes or book to help with definition, evidence, etc.

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What two spheres are interacting in this lab? (2 Points)

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Station: Limestone Rocks

How does water affect limestone rocks? How does acid rain affect limestone rocks?

At this lab station you will investigate how water and acid rain affect limestone. To model limestone you will use chalk, which is a type of limestone. To model acid rain, you will use vinegar.

Materials:

- 2 pieces of chalk
- Water
- Vinegar
- 2 small containers
- Pair of tweezers to remove the chalk pieces
- Paper towel

Procedure:

1. Label one container "acid rain" and the other "water".
2. Place one piece of chalk in each container.
3. In the container labeled "acid rain" cover the chalk with vinegar.
4. In the beaker labeled "water" cover the chalk with water.
5. After three minutes remove the chalk pieces, if possible, and place on a paper towel.
6. Record notes.
7. Dispose of the liquid in the "waste bucket".
8. Throw away the chalk pieces, paper towels, and containers.

*****Place for notes and questions on the back.**

Notes:

Choose one: Acid Rain or Water
How might acid rain alter limestone rocks? How might water alter limestone rocks? Use one of the following terms correctly: erosion, chemical weathering, mechanical weathering, or deposition with explaining how it alters the rocks. Must answer using R.A.C.E.S. (use cheat sheet) and you may also use your notes or book to help with definition, evidence, etc.

What two spheres are interacting in this lab? (2 Points)

Station: Rock Movement

How does shaking affect different types of rocks?

At this lab station you will explore how rocks are altered by vigorous movements such as ocean waves, falling down a rocky mountain slope in a rock or snow avalanche, or tumbling down a turbulent river. To model rocks of different hardness you will use gravel (a harder rock) and sugar cubes (a softer rock). Shaking them will mimic the vigorous motion that occurs in ocean waves, rock avalanches, or riverbeds.

Materials:

- Sugar cubes (approximately 4-5)
- Jar with a lid
- Gravel (a small handful)

Procedure:

1. Put both the sugar cubes and gravel in a jar and close the lid tightly. Then shake the contents of the jar for about 2 minutes.
2. Record results.
3. Place gravel back in container and throw the sugar away in the trash.

*****Place for notes and questions on the back.**

Notes:

How might abrasion (rocks tumbling down a mountain, being tossed around in waves, or washed down a river bed) of rocks affect another rock? Use one of the following terms correctly: erosion, chemical weathering, mechanical weathering, or deposition with explaining how it alters the rocks. Must answer using R.A.C.E.S. (use cheat sheet) and you may also use your notes or book to help with definition, evidence, etc.

What two spheres are interacting in this lab? (2 Points)

Station: Wind

How does wind affect rocks?

At this station you will investigate how wind affects rocks. To model the sand and dirt particles caught in the wind and blown over rocks, you will use sandpaper.

Materials:

- Sandpaper
- Rock
- Paper towel

Procedure:

1. Using a small piece of sandpaper, rub the sandpaper over the rock in the same place multiple times for three minutes.
2. After three minutes of rubbing the rock record results.
3. In your lab notebook, write down your thoughts about how wind affects rocks.
4. Place rock back into bucket and place sandpaper back on the table. Clean up any rock dust that is on the table. You may need to get a paper towel wet to clean up the mess.

*****Place for notes and questions on the back.**

Notes:

How might wind affect rocks? Use one of the following terms correctly: erosion, chemical weathering, mechanical weathering, or deposition with explaining how it alters the rocks. Must answer using R.A.C.E.S. (use cheat sheet) and you may also use your notes or book to help with definition, evidence, etc.

What two spheres are interacting in this lab? (2 Points)

Station: Raindrops, Dripping Water, & Waterfalls

How do raindrops, dripping water, and waterfalls impact rock?

At this lab station you will investigate how dripping or falling water affects rocks. To model waterfalls, raindrops, and dripping water from rock faces or cave ceilings, you will pour water from a pipette held at different heights above the rock. To model the rocks, you will use a pan full of packed sand.

Materials:

- Water
- Pipette
- Shallow pan
- Dry sand

Procedure:

1. Pack the bottom of the pan with dry sand.
2. Fill the pipette with water and drop water (different amounts) at different heights. Explore all the ways that waterfalls, rain, or dripping water can affect surfaces like this.
3. Record results from different heights and amounts of water.
4. As the sand gets wet, you can always repack it, smooth it down and continue to experiment. What differences do you notice between how the water affects dry sand versus wet sand?
5. Record results.
6. Place wet sand in the wet sand bucket. Do NOT put with the dry sand.
7. Sweep any leftover sand and put into the correct bucket.

*****Place for notes and questions on the back.**

Notes:

How might raindrops, dripping water, and waterfalls impact rock? Use one of the following terms correctly: erosion, chemical weathering, mechanical weathering, or deposition with explaining how it alters the rocks. Must answer using R.A.C.E.S. (use cheat sheet) and you may also use your notes or book to help with definition, evidence, etc.

What two spheres are interacting in this lab? (2 Points)

Station: Hillsides and Mountains

How does water affect rocks and soil on hillsides and mountains?

At this lab station you will investigate how rainfall, snowmelt, or natural springs on hillsides or mountain slopes impacts the rock and soil on the slopes. To model the hillside or mountain, you will use a pan of packed dirt tilted in a pan. To model rain, snowmelt, or springs, you will release water from a pipette onto the top of the hillside or mountainside.

Materials:

- Pan
- Dirt
- Water
- Pipette
- Spoon
- Paper Towel

Procedure:

1. Make a hill of dirt in the pan.
2. Using the pipette and release in a slow, steady stream on the dirt near the top of the hill. Fill the pipette three times and release on to the hill at the same place each time.
3. Record the results.
4. Record your **observations** in your lab notebook.
5. Pour the water in the "waste" bucket.
6. Scrape the top layer of mud with a spoon and put in the "mud" bucket.
7. Do NOT throw away the spoon, place on the paper towel.

*****Place for notes and questions on the back.**

Notes:

How might water affect hillsides or mountains? Use one of the following terms correctly: erosion, chemical weathering, mechanical weathering, or deposition with explaining how it alters the hillsides or mountains. Must answer using R.A.C.E.S. (use cheat sheet) and you may also use your notes or book to help with definition, evidence, etc.

What two spheres are interacting in this lab? (2 Points)

Station: I ♡ the beach!

How do waves impact beaches?

At this lab station you will investigate how waves impact beaches. To model a beach you will create a patch of sand on one end of a pan and gently slosh water back and forth inside the pan to model waves.

Materials:

- Pan
- Water
- Sand
- Graduated cylinder

Procedure:

1. Using dry sand make a "beach" at one end of the pan. Pack the sand down, smooth it out.
2. Put 20 ml of water in the pan on the opposite end of the sand.
3. Carefully move the pan back and forth ten times to create waves.
4. Record notes.
5. Place wet sand in the "wet sand" bucket.
6. Place the water in the "waste" bucket.
7. Place the pan back on the table.

*****Place for notes and questions on the back.**

Notes:

How might waves alter beaches? Use one of the following terms correctly: erosion, chemical weathering, mechanical weathering, or deposition with explaining how it alters beaches. Must answer using R.A.C.E.S. (use cheat sheet) and you may also use your notes or book to help with definition, evidence, etc.

What two spheres are interacting in this lab? (2 Points)

Station: Freezing

What happens to rocks when water in the cracks freezes?

For this lab you will investigate how freezing and thawing water in the cracks of rocks can alter them over time. You will explore the properties of water and ice in a plastic or styrofoam cup as a model for water and ice in rock.

Materials:

- One clear or styrofoam cup
- Marker to label and mark the cup

Procedure:

1. Put your name on a styrofoam cup.
2. Draw a line on the upper part of the cup.
3. Fill water to the line of the cup and place in the freezer for overnight.
4. Record notes.

*****Place for notes and questions on the back.**

Notes:

How might water freezing in the cracks of rocks affect them? Use one of the following terms correctly: erosion, chemical weathering, mechanical weathering, or deposition with explaining how it alters the rocks. Must answer using R.A.C.E.S. (use cheat sheet) and you may also use your notes or book to help with definition, evidence, etc.

What two spheres are interacting in this lab? (2 Points)