

Lesson 5

Student Worksheet

Question: What affects the rate of the weathering of a rock?

Rules:

- You must use your safety glasses.
- You will have 24 hours, and bottles cannot leave the classroom.
- The rock must stay inside the bottle at all times.
- As a group, choose one variable from each list (liquid and solid).
- After you have closed the container, you cannot open it up until instructed to do so on Day 2.
- On Day 2 you may not shake your container.
- Only the Materials Manager may get out of their seat.

Variables:

Choose one liquid <ul style="list-style-type: none"> • Vinegar (weak acid) • Carbonated water (water with carbon dioxide in it) • Water 	Choose one solid <ul style="list-style-type: none"> • Sand • Salt • Gravel
--	---

Your materials and justification:

1. Write in the liquid and the solid your group chose.
2. Then check off each box that you think will apply as an Agent of Weathering.

Agents (causes) of weathering	Liquid: _____	Solid: _____
Abrasion	<input type="checkbox"/>	<input type="checkbox"/>
Freezing and Thawing	<input type="checkbox"/>	<input type="checkbox"/>
Release of Pressure	<input type="checkbox"/>	<input type="checkbox"/>
Water	<input type="checkbox"/>	<input type="checkbox"/>
Oxidation	<input type="checkbox"/>	<input type="checkbox"/>
Acid	<input type="checkbox"/>	<input type="checkbox"/>

Hypothesis:

When we measure the weight (mass) of our rock by weighing it tomorrow, there will be (choose one):

- a little less mass
- a lot less mass
- a little more mass
- no change in mass

Turn your hypothesis into a sentence: When we measure the mass of our rock by weighing it tomorrow, there will be

DAY 1

Day 1 Materials:

All groups will have safety glasses, funnels, plastic jar with top, rock sample, scale, 100mL graduated cylinder, 3oz. measuring cup.

Group Jobs:

- | | |
|-------------------|--------|
| Materials Manager | Timer |
| Scale Expert | Pourer |

DAY 1 Procedure:

- 1. **All students** put **AND KEEP** on safety goggles.
- 2. **Materials Manager:** Get one rock sample and one bottle.
- 3. **Scale Manager:** Use the scale to measure the weight (mass) of the rock.
- 4. **All students:** Write in the mass for DAY 1 on the data table.
- 5. **Pourer:** Put the rock into the bottle.
- 6. **Materials Manager:** Get 100mL of your chosen liquid and 3 oz. cup of your chosen solid.
- 7. **Pourer:** Use the funnel to add the liquid and the solid to your bottles.
- 8. **Pourer:** Screw the lid onto the bottle. Label your bottle with group member names.
- 9. **Timer:** Time the other 3 students shaking the bottle for one minute each.

Data Table:

DAY 1 – “Before”
Starting mass (from scale): _____g
Make sure that you are choosing “grams” to measure.

DAY 2

Day 2 materials: safety glasses, paper towels, bowl, scale, calculator.

GROUP JOBS:

Materials Manager

Timer

Scale Expert

Pourer

DAY 2 PROCEDURE:

- 1. **All Students** put **AND KEEP** on safety goggles.
- 2. **Materials Manager:** Pick up your bottle and a tray of materials.
- 3. **Pourer:** Empty contents of bottle into the waste bowl.
- 4. **Timer:** Remove the largest piece of your rock.
- 5. **Timer:** Use paper towel to dry off your rock.
- 6. **Scale Manager:** Measure the weight (mass) of the rock on the scale.
- 7. **All Students:** Record weight of the rock Day 2 in the analysis section below.
- 8. **Materials Manager:** Return all materials and place bowl in the waste bucket.
- 9. **All Students:** Complete the analysis and reflections sections.

ANALYSIS:

Calculate the difference in the mass rock from day 1 to day 2

Day 1 mass g

Day 2 mass g

Difference
In mass = g

Calculate percent change – you may use a calculator.

÷ x 100 =

Difference in mass **Starting mass** **% change**

Class Results of Weathering Competition

Weathering Competition Conclusion

Based on your experimental results, the table of class results and your discussion complete the following in the C-E-R format.

Claim: Based on our class results, _____ (variable) caused the largest % change in weight (mass).

Evidence: The data that provides the evidence for my claim is

Reasoning: The results of this lab make sense with what we learned about weathering, because _____
