

Forensics Week 2- Still a Mystery!

FRAMEWORK

- I. Planning and carrying out investigations
- II. Cause and effect: Mechanism and explanation
- III. PS 1: Matter and its interactions

SKILLS/OBJECTIVES

- To discover who the suspect is by doing two further experiments: white powder analysis and goop thickness analysis
- White powder analysis: find the differences between two different white powders based on how they react to vinegar
- Goop Thickness: find the differences between two goops by timing how long a ball takes to drop through the substance –measures density and viscosity

MATERIALS

o Materials List

- Cornstarch
- Baking soda
- Vinegar
- Petri dishes
- Dropper Bottles
- Soap
- Water
- Glass balls
- Test tubes
- Test tube holders
- Stopwatches

NOTES

BACKGROUND

- Recap last week – what’s the mystery we’re trying to solve?
- What did we do last week to help our investigation? What did we find out?
- What can we do to narrow down our suspects?

Activity #1	White Powder
Materials	<ul style="list-style-type: none">• Cornstarch• Baking soda• Vinegar• Petri dishes• Dropper Bottles
Worksheet	No

- Explain that the suspect’s shoes were inspected and white powder was found on all of them. The two different kinds of white powder found were baking soda and cornstarch. Further explain that white powder was also found on the letter!
- But all the white powder looks alike so we need to figure out how to differentiate the powders. Ask them:
Q: How can we do this?
- Explain that we will do this by testing how the white powders react with a chemical (vinegar). Tell them the two white powders found on the suspect’s shoes were sent to them by the lab.
Q: What does react mean?
- Pour baking soda and cornstarch into separate Petri dishes for teams of two.
- Add drops of vinegar to each solution and record results
- Bring out the white powder found on the letter from the evidence folder (baking soda) and as a whole group observe what happens when vinegar is added to the mystery white powder
- Record the results and discuss which people are still valid suspects.

Activity #2	Goop/Glue
Materials	<ul style="list-style-type: none">• Water

	<ul style="list-style-type: none"> • Glass balls • Test tubes • Test tube holders • Stopwatches
Worksheet	No

Explain that each suspect's pockets were investigated and glue (goop) was found in all four suspects pockets. We have a sample of glue from the envelope of the letter and need to match it to one of the glues that was found in the suspect's pockets. We will do this by testing viscosity.

Q: What is viscosity?

A: Thickness. Ex) honey is more viscous (thick) than water (which is thin). Think what would happen if you dropped a ball in honey vs. water – which one would splash?

- Pour the two 'glues' into test tubes and hand them out to the kids in the test tube racks. The two glues are soap and diluted soap.
- Then tell them that we will differentiate the two glues by testing their viscosity.
- Instruct them to drop the glass beads into the test tubes and time how long it takes for the bead to reach the bottom. If it takes the bead a long time to reach the bottom of the test tube that means the 'glue' is viscous (thick).
- Retrieve the glue from the envelope from the evidence folder. Test the viscosity of the mystery glue using the same technique, but this time do it as a whole science club.
- Record results

CONCLUSIONS

Discuss which suspects are still 'fair game' to have committed the crime!

What is a reaction?

What is viscosity?