Super Sleuths

Exploring the World of Science

Eagle STEM Scrimmage

Team Name	
Team Number	
Student(s) Name	

Instructions

1. Read the mystery scenario.
2. Perform tests ONLY with the materials in your kit:
3. Do **not** taste, touch powders directly, or pour solids down the drain.
4. Perform tests safely and record observations clearly.
5. Answer all questions and identify the correct suspect.

Mystery Scenario: The Case of the Classroom Cookie Caper

During a school field trip, the **Classroom Cookie Jar** was stolen from the cafeteria.
The thief left behind:

- A **mysterious white powder** on the counter
- A **smudged shoeprint**
- A **piece of soil stuck to the shoeprint**

Three suspects were seen near the cafeteria earlier:

Suspect A — Jordan

- Was baking muffins in the Home Ec room
- Often uses **baking soda**
- Wears **small sneakers**
- Walked through the **garden mulch** outside

Suspect B — Riley

- Was making slime during recess
- Used **cornstarch**
- Wears **large athletic shoes**
- Came from the **sandy outdoor play area**

Suspect C — Morgan

- Was preparing lemonade for a fundraiser
- Uses **citric acid**
- Wears **medium-sized shoes**
- Stepped in **clay-rich wet soil** near the water fountain

Your job: Test the unknown powder, analyze the soil and shoeprint patterns, and identify who committed the Cookie Caper.

Powder Analysis

Perform the following tests and record your conclusions:

1. Appearance under hand lens (color, texture):

2. Reaction with vinegar (circle one):
Fizzing | No fizzing

3. Reaction with iodine:
Turns black (starch) | No color change

4. Reaction with isopropyl alcohol:
Dissolves / Does not dissolve

5. pH test (circle one):
Acidic (1–6) | Neutral (7) | Basic (8–14)

6. Based on your results, the powder is (circle one):

- Baking soda
- Cornstarch
- Citric acid
- Flour
- Table salt

Explain how you know:

Soil Sample Comparison

- **Sample 1:** Sandy soil
- **Sample 2:** Mulch + dark organic bits
- **Sample 3:** Clay-like wet soil

The soil stuck to the crime scene print looks like:

Mulch soil | Sandy soil | Clay soil

Match the soil to the suspect who walked through it:

General Knowledge

1. If a powder turns **black** with iodine, what does that tell you?

2. A powder gives a **strong fizz** with vinegar. What type of substance is it?

3. Is a pH of **3** acidic or basic?

4. What is the **proper way to smell** a chemical?

5. What is the chemical name and formula for **table salt**?

The Culrit

Using ALL your evidence (powder, soil, shoeprint), who stole the Classroom Cookie Jar?

My final answer: The culprit is _____.

Explain your reasoning:

1.