

Super Sleuths – Div A

Practice Event / Event For Sale

TEST BOOKLET

Part A – Crime Scene Chemical Evidence

Perform any tests you think are necessary to **identify Powders X, Y, A, B, and C**. On your answer sheet, answer the helpful hints / questions related to each powder and identify each powder. Each helpful hint / question is worth 3 points and the identity of each powder is worth 5 points.

On your answer sheet, answer the following questions related to **General knowledge, lab procedures, and techniques**. Circle the correct answer on your answer sheet. Each is worth 2 points.

1. A solution turns pH paper a dark blue color. Which term would best describe this solution?

- | | |
|--------------------|------------------|
| A) Strongly Acidic | B) Weakly Acidic |
| C) Strongly Basic | D) Weakly Basic |

2. What is the chemical formula of Baking Soda?

- | | |
|---------------------|---------------------------------------|
| A) NaHCO_3 | B) Na_2CO_3 |
| C) NaCl | D) $\text{NaC}_2\text{H}_3\text{O}_2$ |

3. Which of the following is also known as Vitamin C?

- | | |
|----------------|------------------|
| A) Table Salt | B) Ascorbic Acid |
| C) Citric Acid | D) Vinegar |

4. Which of the following would you expect to turn blue or black in the presence of iodine?

- A) Sodium Acetate
- B) Flour
- C) Baking Soda
- D) Citric Acid

5. Baking soda bubbles, fizzes, and foams when it reacts with an acid (such as vinegar). What is the name of the bubbles formed?

- A) Carbon Dioxide
- B) Carbon Monoxide
- C) Oxygen
- D) Water Vapor

Part B – Crime Scene Physical Evidence

Soil Evidence. Compare Soil X to Soils A, B, and C.

On your answer sheet, identify which soil was found near the destroyed Bricko-mobile. (10 points)

Answer the related questions about soil composition and analysis.

(Each is worth 5 points)

Footprint Evidence. A footprint was found near the destroyed Bricko-Moblie. A picture of that footprint is shown below. (5 points)

On your response sheet, indicate which suspect MOST LIKELY left the footprint.

Part C – Analysis of the Crime

Each question is worth 5 points.

1. What evidence would indicate Awful Cop?
2. What evidence would indicate Boss Business?
3. What evidence would indicate Rodney Badvest?

4. Which suspect most likely destroyed the Bricko-Mobile?

**SUPER SLEUTHS FOR SALE 2019
ANSWER SHEET**

Super Sleuth Names: _____

Team Name: _____

Part A –Crime Scene Chemical Evidence

Helpful Hint Questions (Each is worth 3 points)

1. Does Powder X react with vinegar? If so, describe reaction: _____

2. Describe the physical appearance of Powder Y: _____

3. Describe observations when Powder A is added to water: _____

4. Describe the physical appearance (and odor!) of Powder B: _____

5. Does Powder C react with iodine? If so, describe reaction: _____

Identify the Powders (5 points each)

1. What is the identity of Powder X? _____

2. What is the identity of Powder Y? _____

3. What is the identity of Powder A? _____

4. What is the identity of Powder B? _____

5. What is the identity of Powder C? _____

Lab Procedure / Technique Questions. (2 points each, 10 points total)

Circle the Correct Answer

- 1. A B C D
- 2. A B C D
- 3. A B C D
- 4. A B C D
- 5. A B C D

Part B - Crime Scene Physical Evidence

Soil Analysis: Which type of Soil (A, B, or C) most closely matches the soil found near the destroyed Bricko-Mobile (Soil X)? (10 points) Circle the correct answer.

Soil A Soil B Soil C

Which type of soil contains a large amount of clay? (5 points)

Soil A Soil B Soil C

Which type of soil contains a large amount of sand? (5 points)

Soil A Soil B Soil C

Which of the following is NOT a particle that makes up soil? (5 points)

Clay Granite Sand Silt

Footprint Analysis: Which suspect most likely left the footprint near the destroyed Bricko-Mobile? (5 points)

Awful Cop Boss Business Rodney Badvest

Part C - Analysis of the Crime

1. (4 points) _____

2. (4 points) _____

3. (4 points)

4. (4 points)
