

Crime Busters 2019 SSSS Answer Sheet

Student Name: _____

School Name: _____

Points Scored: (____/98)

Qualitative Answers

Fill out the chart based on the evidence provided

| Sample | Identification (2pts per substance) (___/32) | Who does it implicate? (1pt max per sample) (___/9) |
|--------|--|---|
| P1 | | N/A |
| P2 | | |
| P3 | | |
| P4 | | N/A |
| P5 | | |
| Mix1 | | |
| Mix2 | | N/A |
| Mix3 | | |
| L1 | | N/A |
| L2 | | |
| L3 | | |
| M1 | | |
| M2 | | |

Qualitative Concept Questions:

1. Write the common name of these chemical formulas: (1pt each)
 - a. $C_{27}H_{48}O_{20}$ _____
 - b. $C_{19}H_{14}O_2$ _____
 - c. $C_{16}H_{17}NaO_{14}$ _____
2. What carbohydrate(s) reacts to iodine to create a blue/black color? (1pt)
 - a. Simple Sugars
 - b. Starch
 - c. Fiber

Polymer Testing/Natural and Man-made Substances

Fill out the chart based on the evidence provided as animal, vegetable, or synthetic for fibers; human, dog, or cat for hairs; and as one of the 7 plastic types.

| Sample | Identification (1pt each) (___/7) |
|--------|-----------------------------------|
| F1 | |
| F2 | |
| H1 | |
| H2 | |
| PL1 | |
| PL2 | |
| PL3 | |

Polymer Testing/Natural and Man-made Substances Concept Questions

1. True or False: Melanin is located in the medulla _____ (1pt)
2. Identify the fiber as animal, vegetable, or synthetic (1pt overall)
 - a. Nylon _____
 - b. Cashmere _____
 - c. Jute _____
3. List chain growth polymers _____ (½ a pt per each one)

Paper Chromatography (0.5 pts per chromatogram for lab) (___/4)
(Chromatograms are taped here)

1. Who most likely wrote the message? (0.5 point for lab, 2 points for non lab)

2. What are the two phases involved in chromatography? (1pt lab, 2pts non lab)

Crime Scene Physical Evidence

Fingerprints

1. Identify the fingerprint pattern for each of the right hand thumb prints given as one of the three basic patterns. (1pt per each fingerprint)
 - a. Derrick Briwin _____
 - b. Robert Keeling _____
 - c. Jane Boron _____
 - d. Nancy Zhon _____
2. Match each crime scene print to the person's specific finger (1pt each)
 - a. _____
 - b. _____
 - c. _____
3. Write the fingerprint type next to the definition given. (1pt each)
 - a. Invisible without development _____
 - b. Leaves print with blood or substance _____
 - c. Print is malleable _____

Blood Spatters and Blood Types

1. At what cardinal direction did the blood spatter hit the seat? (1pt) _____
2. At what velocity did the blood spatter hit the seat? (1pt)
 - a. Low Velocity
 - b. Medium Velocity
 - c. High Velocity
3. Label the parts of the blood spatter (1pt each):
 - a. _____
 - b. _____
4. List out the blood types of the suspects and from the crime scene.
 - a. Crime Scene _____
 - b. Derrick Briwin _____
 - c. Robert Keeling _____
 - d. Jane Boron _____
 - e. Nancy Zhon _____

Soil

1. What soil sample from the suspects most closely matched the sample from the crime scene? (1pt) _____
2. What type of minerals result in a red or yellow soil? (1pt)
