

**C - Forensics - Pearl City Invitational - 12-12-2020**

The files that pertain to the murders at hand are located here - <https://docs.google.com/document/d/1QqlxwmXo2TYxLngu0zFhj3AdPnfHX-o6OunZkFLMuZo/edit#>  
(<https://docs.google.com/document/d/1QqlxwmXo2TYxLngu0zFhj3AdPnfHX-o6OunZkFLMuZo/edit#>)

As always, feel free to ask questions in the chat and we'll be happy to help! Good luck in finding the Impostors, Crewmate.

## Qualitative Analysis!

Use the table provided to you to identify the lettered compounds, the color which they are in flame and uses for them which connect to the suspects.

Make sure to capitalize and hyphenate where needed. Do NOT use chemical formulas!

Follow the directions given in the questions for the numbered polymers!

1. (3.00 pts) A

Sodium Carbonate

Yellow

Glass from window

2. (3.00 pts) B

Calcium Carbonate

Red-Orange

Diet supplements

3. (3.00 pts) C

Calcium Nitrate

Red-Orange

Fertilizer from plant hat

4. (3.00 pts) D

Magnesium Sulfate

None

Treats sprains

5. (3.00 pts) E

Glucose

None

Sugar

6. (3.00 pts) F

Potassium Chloride

Purple

Lethal Injection

7. (3.00 pts) G

- Calcium Sulfate
- Red-Orange
- Cement

8. (3.00 pts) H

- Sodium Bicarbonate
- Yellow
- Baking Soda

9. (3.00 pts) What is the identity of Polymer #1? What are two uses (related to the suspects) for Polymer #1?

Expected Answer:

10. (3.00 pts) What is the identity of Polymer #2? What are two uses (related to the suspects) for Polymer #2?

Expected Answer:

Fibers/Hair

Use the images from the files to indicate the identity of the fiber or hair and who it might have come from.

11. (2.00 pts) A

Expected Answer: silk

12. (2.00 pts) B

Expected Answer: Spandex

13. (2.00 pts) C

Expected Answer: Wool

14. (2.00 pts) D

Expected Answer: Cotton

15. (2.00 pts) E

Expected Answer: Polyester

16. (5.00 pts) What is Hair #1? Who could it have come from? What type of medulla does it have and what type of cuticles?

Expected Answer: Bat

17. (2.00 pts) **Glass!**

What type of fracture is this and how do you know. Describe in detail.

Expected Answer: radial, caused by one hard impact, radiates outward vs concentric being much circles

18. (6.00 pts) **Bloodstains!**

Identify bloodstains #1 - 3.

19. (6.00 pts) **Blood Typing!**

Identify the blood types found at the scene.

20. (5.00 pts) **Fingerprints!**

Explain the Henry system and its three levels of detail.

Expected Answer:

21. (5.00 pts) **Mass Spectrometry!**

Explain the 4 stages of how a mass spectrometer works.

Expected Answer:

**Tie-Breakers!**

These are trivia questions, which will be used to break ties.

22. (2.00 pts) What is Locard's Exchange Principle? (2 points)

Expected Answer:

23. (5.00 pts) Explain in why compounds have flame colors and the quantum chemistry behind it. (5 points)

Expected Answer:

**24. (3.00 pts)**

Explain the chemistry behind chromatography, highlighting the significance of the polarity of the mobile phase and substance. (3 points)

**Expected Answer:**

**25. (30.00 pts)****Analysis!**

Use all the evidence you've collected to identify the Impostor(s). Explain why you've chosen to eject (who you've found guilty) these suspects and explain why the other suspects are innocent. Detailed and concise explanations will be given extra points.

**Expected Answer:** It's Green and Cyan :)

Good job Crewmates!

Hopefully, you were able to avenge Pink (and Yellow)'s death and figure out if Green (and all of the other suspects) were innocent or guilty!

If you have any questions or comments or just wanna say "Hi, I took the test you wrote at PCHS", dm me (Saum) on Discord at saum#2608! I'd love to hear from you!

GFHL (good fun have luck) for the rest of your tests and for awards!

Lots of hugs and have a nice day,

Saum and Matthew <3