

# Crime Busters B

Rank: \_\_\_\_\_

Points: \_\_\_\_\_

Science Olympiad North Regional  
Tournament at the University of Florida



Name(s): \_\_\_\_\_

Team Name: \_\_\_\_\_

School Name: \_\_\_\_\_

Team Number: \_\_\_\_\_

Section A (30)  
Section B-E (20)  
Analysis (30)  
TOTAL

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

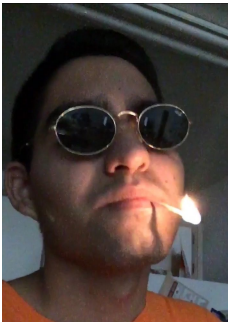
## Up In Flames

At 8:30PM on 3/25/2017, the Fayetteville fire department was dispatched to Colton Bauer's house on fire at 478 Sample Rd and proceeded to douse the flames. The Fayetteville PD was dispatched at 2AM and discovered that the fire was not accidental. Even though much of the house was destroyed, the police were able to determine that the perpetrator broke through the front window, set fire to a trash can located in the kitchen then promptly left out the back door. Evidence was collected from Mr. Bauer's household such as a half burnt crumpled note, food on the counter, fingerprints on the back door, a crumpled shirt found by the broken window and several different substances. Below are the following suspects most likely to commit the crime:



### Suspect #1: Colton Bauer

Owner of the damaged house, Colton Bauer an avid cat lover but also an avid gambler. Colton was in extreme debt to the infamous gang, the Atkatsuki, and was willing to do anything to pay off his debt. On the day of the fire, Colton claimed to be cooking and cleaning until answering the door to the traveling salesman at around 12PM. After getting into a heated argument with the salesman about purchasing insurance, Colton left the house to see the Atkatsuki to discuss his debt. Colton was said to be at bar drinking during the of the attack on his house.



### Suspect #2: J\$

The head of the Atkatsuki, J\$ was always quick tempered. Ready to use violence to solve any problem, J\$ ran the south side of Fayetteville in fear. Around 6PM, witnesses said they saw J\$ threatening to kill every single one of Colton's cats if Colton did not repay him the money loaned to him. Beyond that no one else can confirm J\$'s whereabouts during or after the fire.

### Suspect #3: CC Tinsley

A traveling insurance salesman, CC never accomplished much in his life. On the day of question, CC spent his morning traveling door to door trying to sell insurance. After getting turned down by Bradley Smith, CC moved to Colton's door trying to sell again. CC and Colton got into a heated argument. Afterwards, Colton slammed the door in CC's face injuring him and with one more shout CC threatened to kill Colton and his entire family. CC said he quit work for the day, changed his clothes and went to emergency care to take care of his wound.



### Suspect #4: Bradley Smith

The neighbor of Colton Bauer, Bradley Smith never truly got along with Colton. Bradley and Colton have always been fighting over the property line shared between the two houses. On the day of the fire, Bradley reportedly

stayed home cooking until the evening when he left his house around 7PM to take a brisk walk around the neighborhood.

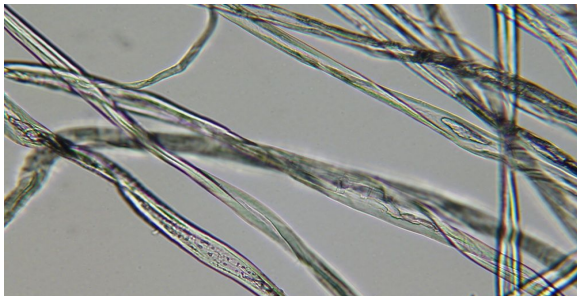
UNKNOWN SUBSTANCES



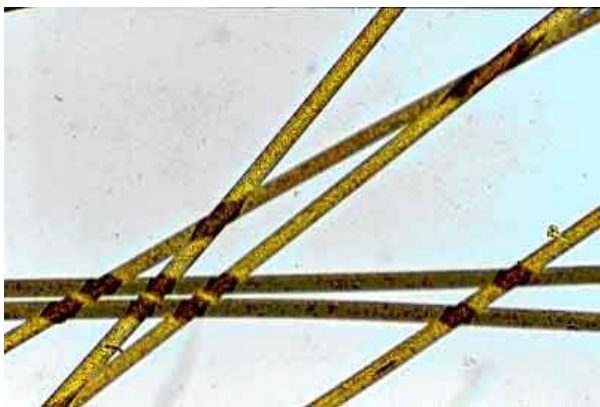
← H1



← F1

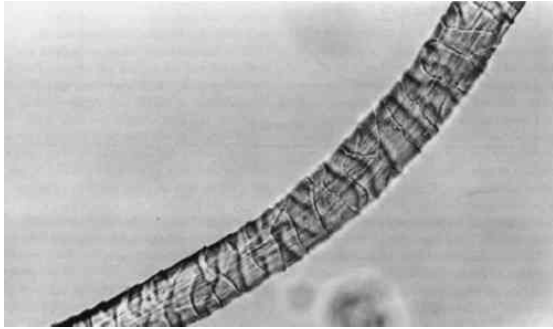


← F2



← F3

← F4



← F5

### A. QUANTITATIVE ANALYSIS

SAMPLE	LOCATION	CONCLUSION
S1	Suspect 1	
S2	Suspect 2	
S3	Suspect 3	
S4	Suspect 4	
S5	Suspect 4	
L1	Crime Scene	
L2	Suspect 1	
L3	Suspect 1	
H1	Crime Scene	
F1	Crime Scene	
F2	Suspect 2	
F3	Suspect 3	
F4	Suspect 4	
F5	Suspect 1	

B. MULTIPLE CHOICE/FILL IN

1. What are the three most common type of fingerprints?

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2. What is a ulnar loop?

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3. How can hair be white?

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4. Which layer of hair provides color, texture and strength?

- a. Medulla
- b. Cuticle
- c. Cortex
- d. Matrix

5. Which hair is finer (less coarse) than the other?

- a. Cat
- b. Human
- c. Dog
- d. Horse

6. What is an alloy?

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7. Of the following which **is NOT** an appropriate way to test for a fiber?

- a. Burning
- b. Bleach dip
- c. HCl dip
- d. Dye test

8. What are the base pairs in DNA?

- a. Adenine/Cytosine and Thymine/Guanine
- b. Thymine/Cytosine and Adenine/Guanine
- c. Adenine/Thymine and Cytosine/Guanine
- d. Adenine/Uracil and Cytosine/Guanine

9. How many **genes** are found in the **human nucleus**?

- a. 23
- b. 39
- c. 38
- d. 46

10. What is chromatography?

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C. FINGERPRINT ANALYSIS



Fingerprint found at scene

Colton Brauer:



J\$:



CC Tinsley:



Bradley Smith:



Who does the fingerprint belong to? \_\_\_\_\_

D. SHOEPRINT ANALYSIS



Shoe print found outside of the house

Colton Brauer:

J\$:

CC Tinsley:

Bradley Smith:

Who does the shoe print belong to? \_\_\_\_\_

E. CHROMATOGRAPHY:



Ink on half burnt note found inside the trash can

Colton Brauer:



CC Tinsley:

J\$:



Bradley Smith:





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