

FORENSICS NATIONAL 2009 CRIME Station # _____

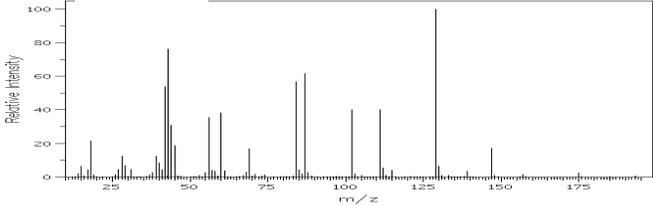
Jack of Lantern, a best in show orange tabby American Shorthair cat was missing from his cage at the Tarheel Triangle Cat Fanciers show. Suspicion immediately fell on four people. They are Bernie Boyle, custodian; Gerry Gray, owner of Precious, the cat next to Jack; Jim Jenson, owner of Garfield-Jack's chief rival; and Shawn Shoemaker, organizer of the show.

Uniformed officers responded quickly and found the following evidence: Hair was all over everywhere. There were some fibers where Jack had apparently clawed at his abductor. There were blood spatters on the cage and on the table just outside the cage. There were paint scratches on the cage where it was obvious a tool had been used. There were also bits of plastic on the ground, some powders, broken glass and some liquid. There were also 3 fingerprints not belonging to Jack's owner, #1 on the cage, #2 on the table next to the cage, & #3 on a shopping list found on floor by cage.

The ink from the shopping list was sent to the lab for paper chromatographic analysis. After developing in water for 10 minutes it was determined that the ink was composed of four colors with R_f values of .978, .726, .662, & .448. The paint was also analyzed chromatographically using TLC and it was determined that there were three colors making up the paint when using water as the solvent. The R_f values were .767, .900, & a fluorescent dye at .484. The liquid that looked like a beverage was also sent to the lab for paper chromatographic analysis. There were 4 distinct color molecules in the liquid with R_f values of .331, .429, .774, and .989. A mass spec was done on the clear liquid. The results are below. The blood was subjected to PCR and DNA analysis, and microscopic examination. The results are below.

The powders, hair, fibers, glass and plastics have been put into vials for you. The glass and plastics were fused to prevent any injury from occurring. All of the plastics except #2 burned with an orange flame. Plastic #2 had a green flame

Your task, detectives, is to analyze the substances found at the crime scene and on the suspects, do a chromatogram of the four suspects pens and juices and paint scrapings from their tools, determine which if any of the prints, hair & fabric samples, etc. found at the scene belong to which of the suspects and determine who, if possible, has Jack.

<p>Blood 1 Photomicrograph</p> 	<p>Blood 2 Photomicrograph</p> 												
<p>Blood 1 DNA</p> 	<p>Blood 2 DNA</p> 												
<p>Mass Spec</p> 	<p>Refractive Indices of types of glass</p> <table border="1"> <thead> <tr> <th>Type of Glass</th> <th>Refractive Index</th> </tr> </thead> <tbody> <tr> <td>Crystal Glass</td> <td>1.805</td> </tr> <tr> <td>Common Glass</td> <td>1.52</td> </tr> <tr> <td>Pyrex</td> <td>1.33</td> </tr> <tr> <td>55% Lead Flint Glass</td> <td>1.669</td> </tr> <tr> <td>29% Lead Flint Glass</td> <td>1.569</td> </tr> </tbody> </table>	Type of Glass	Refractive Index	Crystal Glass	1.805	Common Glass	1.52	Pyrex	1.33	55% Lead Flint Glass	1.669	29% Lead Flint Glass	1.569
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