

**TOP
SECRET**

The Case of the Chemistry Catastrophe

Case #: 44920037CC

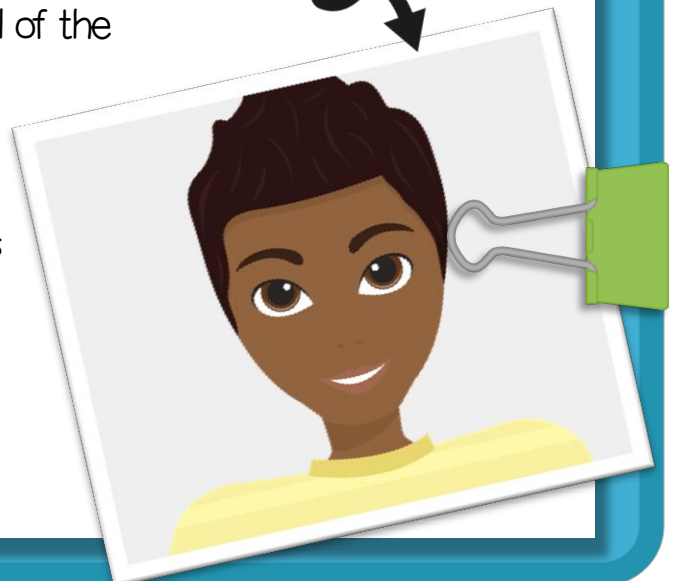
Harrison is a self-proclaimed science nerd who loves learning about chemistry. On Thursdays, the junior high has an open lab after school for any students who have work they need to make up or skills they need to practice for class. Students sign up for time slots in order to reserve their place in the lab. Harrison's name is always on that list. There is no adult supervision in the lab even though there are some potentially dangerous materials in there. Students who would like to take advantage of the after-hours facility must have parent permission and pass a rigorous test on the behavior and safety rules for using the lab equipment.

When Harrison arrives to school on Friday, he is immediately called to the principal's office. Apparently someone blew up the lab last night, causing \$750 in damage to school property. Part of the sign-up list was burned in the explosion and the last legible name on the list is Harrison's! It doesn't take long before a rumor starts that he is the one responsible for all the damage. Harrison knows that the lab was in perfect condition when he left at his usual time last night. Someone else is responsible for this catastrophe and if Harrison can't figure out who, then he'll get the blame!

Objective: Determine which of the students are responsible for blowing up the chemistry lab. Read all of the suspects' statements. The guilty parties should be easy to spot because they will try to lie to cover up their actions. Remember to fill out your case report as you work on the case.

Suspects: Maisie, Michael, Lilly, Peyton, Isabelle, and Easton

Client



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Suspect #1 - Maisie

I can't believe someone blew up the science lab! I don't think Harrison would do that because he's just so good at chemistry, but I've heard he was the last one in there. When I was in the lab, I had to solve the following expression to figure out how much ammonia to add to my beaker:

$$(9+9)+8^2 \times 6+3$$

Nothing exploded, so I'm assuming my answer of 405 was correct.

Suspect #2 - Michael

Chemistry is the worst! I normally like science, but not when there's so much math involved. While I was in the lab, I was adding citric acid to a solution. In order to know how much, I had to solve this expression using PEMDAS:

$$(7 + \frac{12}{2}) + 40 \div 4 \times 5$$

Good thing I remembered that you always multiply before you divide! I got 15 for my answer.

Suspect #3 - Lilly

It's too bad the lab got damaged, but hardly anyone other than Harrison used it much anyway. I was mixing hydrogen peroxide with water and I know I was supposed to add 737 mL. Here's my work to prove I did it correctly:

$$7 + 9^3 + (100 \div 10 \times 10)$$

$$7 + 9^3 + (100 \div 100)$$

$$7 + 9^3 + 1$$

$$7 + 729 + 1$$

$$736 + 1$$

$$737$$

Suspect #4 - Peyton

$$10 + 6 \div 2 + 28 \div 4$$

I feel bad for Harrison, but I doubt he'll get into much trouble. He might have to serve a detention or two, but that's not so bad. When I was in the lab Thursday, I had to solve the problem below to know how much sulfur to add to my experiment.

I had to add 9 g of sulfur and it stunk up the lab. Even my clothes smelled like rotten eggs once I finally got out of there!

Suspect #5 - Isabelle

I had just one assignment to make up from when I was absent. I had to solve all of these math problems so I knew how much of each chemical to add. It was pretty simple because I remembered the steps for the order of operations.

You always do whatever is inside the parentheses first.

Then, you solve the exponents.

The next step is doing all the multiplication and division in order from left to right, followed by the addition and subtraction from left to right.

Easy peasy!

Suspect #6 - Easton

I hope you can help Harrison figure out what happened in the lab. I am willing to bet that he had nothing to do with it. He helped me with my chemistry homework on Thursday and he really knew what he was doing! Here's what we got:

$$7 + 8^3 + (5+2)$$

$$7 + 8^3 + 7$$
$$7 + 512 + 7$$

$$519 + 7 = 526$$

Case Report for: The Case of the Chemistry Catastrophe



Suspect

Evidence

Verdict

Maisie		<p>Innocent <input type="checkbox"/> Guilty <input type="checkbox"/></p> <p>I know this because _____</p> <p>_____</p> <p>_____</p>
Michael		<p>Innocent <input type="checkbox"/> Guilty <input type="checkbox"/></p> <p>I know this because _____</p> <p>_____</p> <p>_____</p>
Lily		<p>Innocent <input type="checkbox"/> Guilty <input type="checkbox"/></p> <p>I know this because _____</p> <p>_____</p> <p>_____</p>
Peyton		<p>Innocent <input type="checkbox"/> Guilty <input type="checkbox"/></p> <p>I know this because _____</p> <p>_____</p> <p>_____</p>
Isabelle		<p>Innocent <input type="checkbox"/> Guilty <input type="checkbox"/></p> <p>I know this because _____</p> <p>_____</p> <p>_____</p>
Easton		<p>Innocent <input type="checkbox"/> Guilty <input type="checkbox"/></p> <p>I know this because _____</p> <p>_____</p> <p>_____</p>