

Name: _____

Period _____

Toxicity Formative Assessment



Ms. C went out with her best friends, Mr. K, and Mr. A after school on Friday. They wanted to drink some caffeine ($C_8H_{10}N_4O_2$) because they were so tired from a long week at school.

Each teacher had 3 cups of plain black coffee, and 1 cappuccino. Mr. K, Mr. A, and Ms. C were feeling great! They felt so much better and were so happy.



Then things got crazy. Somebody ordered energy shots. Each teacher took 2 shots of 5-hour energy.

Mr. A and Mr. K left the coffee shop feeling great and energized.

However, Ms. C started throwing up and left the coffee shop in an ambulance. The next morning, she woke up...



DEAD!

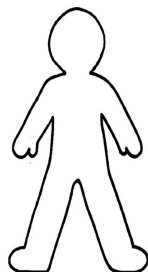
Based on the scenario, answer the following questions.

1. How is it possible that everyone drank the same amount but only Ms. C died?

2. Show the amount of caffeine in each person's body by using dots to represent caffeine molecules.



Mr. K



Mr. A



Ms. C

3. Do you think Ms. C would have survived if she didn't drink both of those 5-hour energy shots? Why or why not?

4. What do you think happened in Ms. C body that caused her to die?

5. The caffeine was **toxic** to Ms. C which resulted in her death, but it was **not toxic to** Mr. K and Mr. A – they were fine. **How** can something be toxic and not toxic at the same time?

6. People drink caffeine and coffee all the time, but it still killed Ms. C. However, if people drank hydrochloric acid, which is **toxic** they would **certainly** get sick and die.

What makes one substance **more toxic than another**? Explain your thinking.