Name: _____ **Date:** _____

Middle School Lab Forensics: Prove You Can Surmount These Advanced Safety Scenarios

Students evaluate complex experimental hazards, synthesize emergency response priorities, and analyze reagent incompatibility through rigorous situational inquiry.

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1. A student accidentally knocks over a graduated cylinder containing an unknown volatile organic solvent. According to standard safety protocols for hazard mitigation, which action must take priority?

A. Immediately neutralizing the liquid with a strong base
B. Alerting the instructor and securing the perimeter to prevent slips
C. Using a paper towel to quickly absorb the liquid before it evaporates
D. Opening all windows and turning on the room's ceiling fans

2. If a student's clothing catches fire during a Bunsen burner experiment, the most effective immediate response is to run to the safety shower to extinguish the flames.

A. True
B. False

3. When diluting a concentrated acid for a chemical reaction, a scientist must always add the _____ to the _____ to prevent rapid heat release and splashing.

A. Water; Acid
B. Acid; Water
C. Base; Catalyst
D. Solvent; Solute

4. An experiment requires heating a test tube over an open flame. Which of these demonstrates a sophisticated understanding of mechanical safety and thermal energy?

A. Sealing the test tube with a rubber stopper to prevent vapor loss
B. Holding the test tube vertically to ensure even heating of the base
C. Pointing the mouth of the test tube toward the center of the lab bench
D. Pointing the mouth of the test tube away from yourself and all other people

5. Secondary containers used for storing transferred chemicals only require a label if the substance is known to be highly toxic or corrosive.

A. True
B. False

6. To safely detect the odor of a chemical released during a reaction without inhaling high concentrations of potentially toxic vapors, you should use the ____ technique.

A. Deep inhalation
B. Direct sniffing
C. Wafting

D. Suctioning

7. During a lab involving electrical circuits and water baths, you notice a wire has a small section of exposed copper. Evaluate the safest course of action:

A. Continue the lab but move the water bath several feet away
B. Wrap the exposed wire with electrical tape and proceed
C. Disconnect the device and report the damaged equipment immediately
D. Ensure you are wearing rubber gloves while touching the wire

8. If a corrosive alkali solution splashes into a student's eyes, the victim must flush their eyes at the eyewash station for a minimum of _____ minutes.

A. Two
B. Five
C. Ten
D. Fifteen

9. When disposing of biological specimens or chemical waste, it is acceptable to pour them down the drain as long as they are flushed with a large volume of water.

A. True
B. False

10. Which of the following represents an analytical approach to selecting Personal Protective Equipment (PPE) for a lab involving heating glass and using mild acids?

A. Wearing only a lab coat because the acids are low concentration
B. Wearing impact-resistant glasses rather than chemical splash goggles
C. Wearing chemical splash goggles, a lab apron, and heat-resistant gloves
D. Wearing sandals to stay cool while working near bunsen burners