"Pressure Pop!" — A Gay-Lussac's Law Design Challenge

Name: _____ Date: _____ Period: _____

Group Members: _____ _____

_____ _____

Challenge: Can you design a safe, sealed container that shows how pressure increases as temperature increases representing Gay-Lussac's Law?

What is Gay-Lussac's Law?

Gay-Lussac's Law states _____

_____

Part 1: Prediction

1. What do you think will happen to the pressure inside YOUR sealed container when it's placed in hot water?

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_____

2. How will you know that pressure has increased?

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Part 2: Design Plan

Draw and label a sketch of your container setup below. Show how it will be sealed and how you'll observe the energy flow, pressure change (e.g., balloon, cap popping) and change in matter (perhaps molecule motion & molecule density.)

📐 My Setup: (Use arrows and labels to represent pressure, temperature, energy flow!)

Part 3: Experiment (Circle what applies to your design or write it in!)

Water Temperature (°C)	Observation (Balloon size, cap popped, etc.)	Time to pressure change (sec)
Cold (Ice bath)	Plastic 500 mL beaker	
Room Temperature		
Hot (from kettle or tap)		

Part 4: Analysis & Reflection

1. What was the relationship between temperature and pressure in your experiment?

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2. Did your observations support Gay-Lussac's Law? Why or why not?

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3. What real-world examples can you think of where heat causes pressure to increase in a gas? (Hint: think about car tires, soda cans, or even cooking.)

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Revising Your Design

Design a <u>new version</u> of your container that prevents it from bursting while still showing increased pressure. Include energy flow, pressure change, and change in matter (perhaps particle motion molecule density.) How would you change your materials or structure? In what real-world scenario could your design improve?

Describe it here & sketch it below:

_____

_____

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