

# What do five pressure–volume pairs tell us?

Name / group: \_\_\_\_\_ Date: \_\_\_\_\_

**Question:** To what extent do the data from this trial support the idea that pressure is inversely proportional to volume ( $PV \approx \text{constant}$ )?

Use the Boyle's law lab: 60 mL syringe, trial 1. You will work with a recording of a real experiment. Rereading a paused frame checks a reading; it is not a new trial.

## 1. Before observing

Predict what will happen to  $P$  as  $V$  decreases and explain why. Identify what changes, what is measured and what is assumed constant.

## 2. Record and calculate

Record the initial pressure and step through the pauses with the 5 mL decrease control. Record only the volumes in the table. Read  $P$  in kPa; it is absolute pressure, so do not add atmospheric pressure. Flag any reading outside 0–210 kPa and do not use it to test the model. Do not invent values you cannot read.

Trial: \_\_\_\_\_ Table shared with, if applicable: \_\_\_\_\_

| V (mL) | P (kPa) | PV (kPa·mL) | Note / moment |
|--------|---------|-------------|---------------|
| 60     |         |             |               |
| 50     |         |             |               |
| 40     |         |             |               |
| 35     |         |             |               |
| 30     |         |             |               |

Work through one PV calculation with units:

Lowest valid PV: \_\_\_\_\_ Highest valid PV: \_\_\_\_\_

Attach a screenshot that links pressure and volume, or a precise reference to the trial and moment. Keep and explain any correction to a reading.

### 3. Conclude and review

Write 120–180 words. Use at least two rows, compare PV values and explain one limitation. Distinguish what was observed from what was assumed: temperature is not recorded in this activity; it is assumed to be approximately constant.

Propose a specific check and explain whether it involves rereading the same recording or comparing an independent trial. If you worked in a pair, this conclusion and proposal must be your own.

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### Before you submit

Include your prediction, table, calculation, evidence for one reading, conclusion and review. Report any access issues; the experimental part will remain pending until it is completed.

The five criteria of the shared rubric apply: plan, recording, calculation, conclusion and review; 4 points per criterion, maximum 20.