

## ISOTHERMAL, ISOBARIC AND ISOCHORIC PROCESSES

### TASK 1 – FILL IN THE GAPS

#### Boyle's Law<sup>1</sup>

**WORDS: volume, substance, pressure, Robert Boyle, inversely proportional, volume temperature, constant, fixed, Boyle-Mariotte.**

Boyle's law, sometimes referred to as the \_\_\_\_\_ law, describes the \_\_\_\_\_ relationship between pressure and \_\_\_\_\_ of a gas, if the \_\_\_\_\_ and amount of \_\_\_\_\_ are kept within a closed system. The law was named after chemist and physicist \_\_\_\_\_, who published the original law in 1662.

The law itself can be stated as follows: For a \_\_\_\_\_ amount of an ideal gas kept at a fixed temperature, \_\_\_\_\_ and \_\_\_\_\_ are inversely proportional.

### TASK 2 – FILL IN THE GAPS

#### Charles' law<sup>2</sup>

**WORDS: volume, decrease, constant, temperature, absolute temperature, pressure, volume, expands, direct, experimental, volume**

Charles' law is an \_\_\_\_\_ gas law. French physicist Charles studied the effect of \_\_\_\_\_ on the \_\_\_\_\_ of a gas at constant pressure. This law describes how a gas \_\_\_\_\_ when the temperature increases; conversely, a \_\_\_\_\_ in temperature will cause a decrease in the \_\_\_\_\_.

Formally, Charles' law states: When the \_\_\_\_\_ on a sample of a dry gas is held \_\_\_\_\_, the \_\_\_\_\_ and the \_\_\_\_\_ are going to be in \_\_\_\_\_ proportion.

<sup>1</sup> Text from: <https://aula44.files.wordpress.com/2009/09/activities-1-unit-2-3c2ba-eso.pdf>

<sup>2</sup> Text modified from: <https://www.toppr.com/guides/chemistry-formulas/charles-law-formula/>

### TASK 3 – FILL IN THE GAPS

#### Gay-Lussac's law<sup>3</sup>

WORDS: pressure, relationship, striking, kinetic energy, flexible, directly, container, greater, rigid, temperature, volume, Gay-Lussac, absolute temperature, molecules, constant, increased

When the \_\_\_\_\_ of a sample of gas in a rigid container is \_\_\_\_\_, the \_\_\_\_\_ of the gas increases as well. The increase in \_\_\_\_\_ results in the \_\_\_\_\_ of gas \_\_\_\_\_ the walls of the container with more force, resulting in a \_\_\_\_\_ pressure. The French chemist Joseph \_\_\_\_\_ (1778-1850) discovered the \_\_\_\_\_ between the pressure of a gas kept at \_\_\_\_\_ volume and its \_\_\_\_\_.

Gay-Lussac's Law states that the pressure of a given mass of gas varies \_\_\_\_\_ with the absolute temperature of the gas, when the \_\_\_\_\_ is kept constant. Gay-Lussac's Law is very similar to Charles's Law, with the only difference being the type of \_\_\_\_\_. Whereas the container in a Charles's Law experiment is \_\_\_\_\_, it is \_\_\_\_\_ in a Gay-Lussac's Law experiment.

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<sup>3</sup> Text modified from: [https://chem.libretexts.org/Bookshelves/Introductory\\_Chemistry/Introductory\\_Chemistry\\_\(CK-12\)/14%3A\\_The\\_Behavior\\_of\\_Gases/14.05%3A\\_Gay-Lussac's\\_Law](https://chem.libretexts.org/Bookshelves/Introductory_Chemistry/Introductory_Chemistry_(CK-12)/14%3A_The_Behavior_of_Gases/14.05%3A_Gay-Lussac's_Law)

#### TASK 4 – ASSIGN THE RIGHT CHARACTERISTICS

(Some characteristics can be assigned to more than 1 process)

CHARACTERISTICS: constant volume,  $\frac{P}{T} = \text{constant}$ , volume change, Boyle-Mariotte, Gay-Lussac, pressure change,  $\frac{V}{T} = \text{constant}$ , constant pressure, Charles, constant temperature,  $PV = \text{constant}$ , heat transfer.

ISOTHERMAL PROCESS	ISOBARIC PROCESS	ISOCHORIC PROCESS