

Gas Volumes Follow Simple Ratios

Understanding Gay Lussac's Law of
Gaseous Volumes (1808)

Gay Lussac's Law



The Law

“When gases combine or are produced in a chemical reaction, they do so in a simple ratio by volume.”

Discovered by French chemist Joseph Louis Gay Lussac in 1808. This observation established the foundation for the law of definite proportions by volume.

The Environmental Prerequisite

Condition Required: Same Temperature & Pressure



The integer ratio rule only applies provided all reacting and resulting gases are measured under identical environmental conditions.

Volume fluctuates with heat and compression, making uniform conditions a strict prerequisite for the math to work.



You've Learned the Theory. Let's Test Them Now.

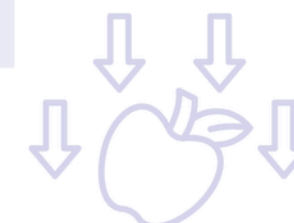
$$E=mc^2$$



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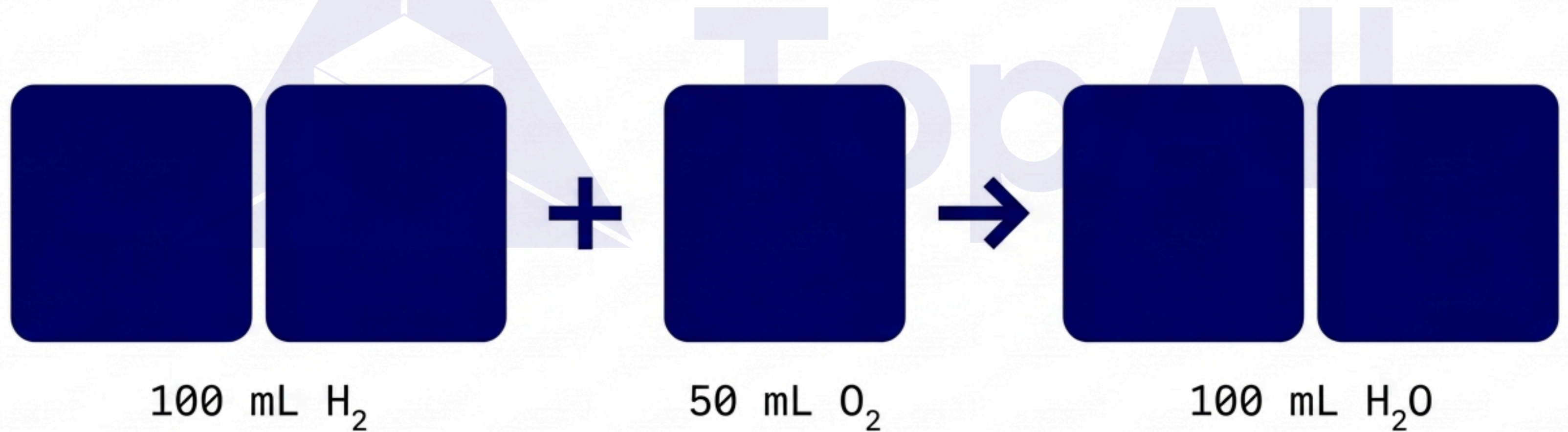


Key Highlights

- » Free Study Material, Videos & Infographics
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Proving the Law: Synthesizing Water

Hydrogen and Oxygen combine to form water vapour without leaving unreacted gas behind.



Breaking Down the Volumes

Hydrogen

100 mL

Oxygen

50 mL

Ratio: $\text{H}_2 : \text{O}_2 = 2:1$

100 mL of hydrogen combines perfectly with 50 mL of oxygen, resulting in a simple, perfect whole-number ratio of 2:1.

Synthesis & Conclusion

Gas reaction volumes always result in simple whole-number ratios.

Gay Lussac's law of definite proportions by volume proved that chemistry operates on elegant, predictable mathematical integers. Explained later by Amedeo Avogadro in 1811, this simple volumetric ratio paved the way for our modern understanding of polyatomic molecules.



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