



# SCIENTIFIC LAWS

Scientific laws comprise a significant percentage of science questions. While this study guide is in no way complete, we hope that this will serve as a starting point from which players develop their knowledge base and gain a deeper understanding of the underlying concepts.

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**BERNOULLI'S PRINCIPLE** – The pressure exerted by a fluid decreases as its velocity increases

**BOYLE'S LAW** – The volume of a gas is inversely proportional to its pressure if temperature is held constant.

**CHARLES' LAW** – The volume of a gas is directly proportional to temperature if pressure is held constant.

**COULOMB'S LAW** – The force between two electric charges is inversely proportional to the square of the distance between them and directly proportional to the product of their charges

**DALTON'S LAW** – The total pressure of a gas mixture is equal to the sum of the partial pressures of the components

**GRAHAM'S LAW** – The rate of effusion of a gas is inversely proportional to the square root of its molar mass.

**HENRY'S LAW** – The solubility of a gas in a liquid is directly proportional to the partial pressure of the gas

**HESS'S LAW** – The amount of energy generated from a chemical reaction is the same whether the reaction happens in one step or several steps.

**HOOKE'S LAW** – The extension of a spring is proportional to the load placed on it. Or, stress is directly proportional to strain.

**HUBBLE'S LAW** – Galaxies recede from each other with a velocity proportional to their distance.



**OHM'S LAW** – Electric current is equal to the potential difference across the conductor divided by resistance ( $I=v/R$ )

**RAOULT'S LAW** – When a substance is dissolved in a solvent, the solution formed will have a lower freezing point, higher boiling point, and less vapor pressure than the pure solvent.

**SNELL'S LAW** – The ratio of the sine of an angle of incidence to the sine of the angle of refraction is a constant.

