



The **Law of Conservation of Energy** basically states that **energy cannot be created or destroyed, but can change its form.**

The **Law of Conservation of Mass** basically states that **mass cannot be created or destroyed, but can change its form.**

In classical physics energy is conserved because of the nature of forces. There could be forces according to the Laws of Newton without conserve energy but there are not (so this have to be an axiom).

In classical physics mass is conserved for kinematic reasons, as there is no way to change the mass and conserve the momentum for all observers at the same time.

The Law of Conservation of Matter was first clearly and unambiguously formulated by Antoine Lavoisier, who is often referred to as the father of modern chemistry.

Lavoisier used mass as measure of matter, so he states:

- *In a chemical reaction, the sum of the mass of the reactants equals the sum of the mass of the products.*

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**Antoine-Laurent de Lavoisier** (August 26, 1743 – May 8, 1794) was a French nobleman prominent in the histories of chemistry, finance, biology, and economics. The "*father of modern chemistry*", he stated the first version of the Law of Conservation of Matter, recognized and named oxygen (1778), disproved the phlogiston theory, and helped to reform chemical nomenclature. He was also an investor and administrator of the Ferme Générale, a private tax collection company; chairman of the board of the Discount Bank (later the Banque de France); and a powerful member of a number of other aristocratic administrative councils. Due to his prominence in the pre-revolutionary government in France, he was beheaded at the height of the French Revolution.

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## Can a severed head think?

A story relates how Lavoisier arranged a final experiment at his death intended to determine whether and for how long a severed head remains conscious after decapitation. Supposedly, Lavoisier decided to blink as many times as possible, and had an assistant count the blinks, which numbered between 15 and 20. The story may be apocryphal. Standard biographies have never mentioned the incident, and some biologists have expressed skepticism that it would be possible. Empirical evidence on this point varies in reliability and is difficult to evaluate.