

**Supplemental Table.** Brief history of select events in the historical construction of the modern periodic table

Cards	Year	Event
Set A	1669	Hennig Brand, a German alchemist, made the first modern chemical discovery of an element, Phosphorus, when trying to create gold from distilled urine.
	1789	Antoine-Laurent Lavoisier published the first modern listing of the elements, the “Table of Simple Substances” in his <i>Traité Élémentaire de Chimie (Elementary Treatise on Chemistry)</i> . Lavoisier defined an element as a substance that could not be further broken down. Although his list contained 33 substances, many are now known to be compounds or mixtures, and he also included things like heat and light.
	1803	John Dalton, pioneer of atomic theory, presented his first list of relative atomic weights for a number of substances, including some elements, estimated according to the mass ratios in which they combined.
	1813	Johann Dobereiner noticed that the atomic weight of strontium was halfway between those of calcium and barium. These three elements also had similar properties. Dobereiner discovered more of these sets of three and called it the Law of Triads.
	1862	A. E. Beguyer de Chancourtois arranged the elements on a 3-D cylinder; similar elements lined up in vertical columns. Although he was the first scientist to develop a system for showing the periodicity in the elements by atomic weight, his work received very little attention, in part because his original paper did not include a diagram.
	1863	John Newlands published a table with elements arranged in groups of eight based on their physical properties and atomic weight, proposing the elements followed the Law of Octaves, similar to a musical scale. His table was not well received, in part because two elements were in the same box in several spots.
Set B	1864	Julius Lothar Meyer developed a table for arranging some of the elements known at the time; he revised it in 1869, publishing a very similar table to Mendeleev’s. However, because Mendeleev published his table first, and it predicted new elements, Mendeleev got most of the credit.
	1869	Dmitri Mendeleev published his periodic table of all 63 known elements. He arranged the elements by their weight as well as other physical and chemical properties. At the time, the underlying chemical structure of atoms was not known.
	1871	Mendeleev publishes refined periodic table. Some scientists were skeptical, but when new elements were discovered in support of Mendeleev’s predictions, his periodic table became accepted by the scientific community.
Set C	1894–1900	Discovery of the noble gases. Although not predicted by Mendeleev, these elements were easily added to his configuration of the table.
	1913	Henry Moseley demonstrated elements are unique based on their number of protons. This enabled a re-arranging of the periodic table based on atomic number and addressed a flaw in earlier tables arranged by weight, that some elements’ positions by weight did not reflect their chemical properties.
	1945	Glenn Seaborg, a member of the Manhattan Project, separated the lanthanides and actinides group into their own block. This final major revision to the modern periodic table reflects its basis in quantum mechanics.