

Atomic Theory Timeline Worksheet

Make a timeline of the development of the atomic theory, highlighting the people who contributed to our understanding of the atom, what those contributions were, and when these contributions were made.

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Answers

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- 1) **~450 B.C:** The Greek philosopher Democritus stated, ' All matter around us is made of indivisible tiny particles — atomos.'
- 2) **1803:** English schoolteacher John Dalton proposed that all elements comprise tiny, indivisible particles called atoms. These atoms are unique for each element and react with atoms of other elements in specific ratios to form compounds.
- 3) **1896:** English physicist J. J. Thomson discovered that atoms have negatively charged particles called electrons with the assistance of a cathode ray tube.
- 4) **1909:** New Zealand scientist Ernest Rutherford used his 'Gold Foil' experiment - which consisted of bombarding a thin foil of gold with alpha particles - to determine that most of an atom is made up of empty space...except for a positively charged center which he called the nucleus.
- 5) **1911:** Danish physicist Niels Bohr proposed that electrons move around the nucleus in fixed orbits. The electrons could gain or lose energy to move up and down these orbits with fixed energy levels.
- 6) **1919:** The positively charged particle was identified and named 'proton.'
- 7) **1924:** Physicists Erwin Schrödinger and Louis de Broglie theorized that electrons can act both as waves and particles, just like light. The energy levels occupied by these electrons are called orbitals (different from orbits), which are areas where there is a high chance of encountering an electron (~90%).
- 8) **1932:** Rutherford, alongside English physicist James Chadwick, discovered the presence of a neutral particle in the nucleus, i.e., a particle that had no charge, which was subsequently dubbed the neutron.