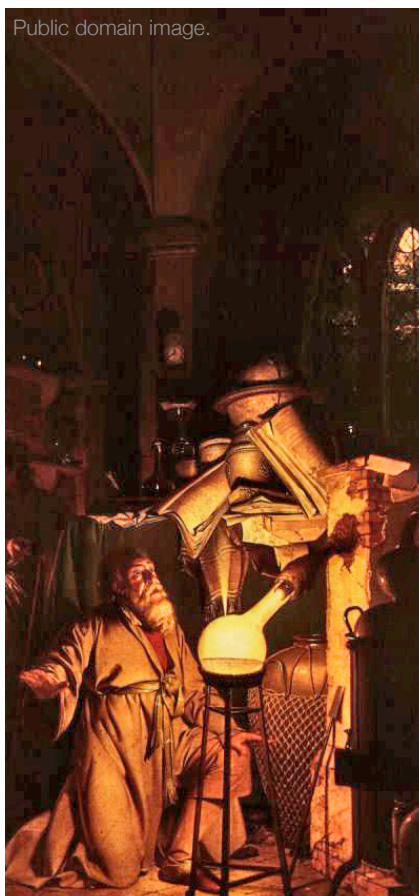


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Discovering the Elements

Match the person with their discoveries.

- | | |
|--------------------|----------------------|
| A. Johann Becher | E. Humphry Davy |
| B. Robert Boyle | F. Antoine Lavoisier |
| C. Hennig Brand | G. Paracelsus |
| D. Henry Cavendish | H. Joseph Priestley |

_____ The first person to challenge the Greek idea of the Four Elements, he believed there were only three elements: the **tria prima**.

_____ While looking for a way to extract gold from urine, he discovered a substance that burned brighter than a candle but stayed cold: the **icy noctiluca**. This was the element **phosphorus**.

_____ Unlike alchemists, who kept their discoveries secret, he published his methods and discoveries. His most famous work was *The Sceptical Chemist*.

_____ Proposed that fire was caused by an ethereal, odourless, tasteless, colourless, weightless substance called **phlogiston**.

_____ Discovered the first elemental gas when he added zinc to hydrochloric acid. He named the tasteless, odourless, colourless, inflammable gas **inflammable air**, and believed to be phlogiston. This was **hydrogen** gas.

_____ A Unitarian minister who investigated **fixed air** given off by fermentation in breweries, he is famous for heating mercuric calc and collecting a gas that could reignite wooden splits. He called this gas **dephlogisticated air**.

_____ After hearing about the Unitarian minister's experiments, this natural philosopher discovered that dephlogisticated air was actually an element: **oxygen**.

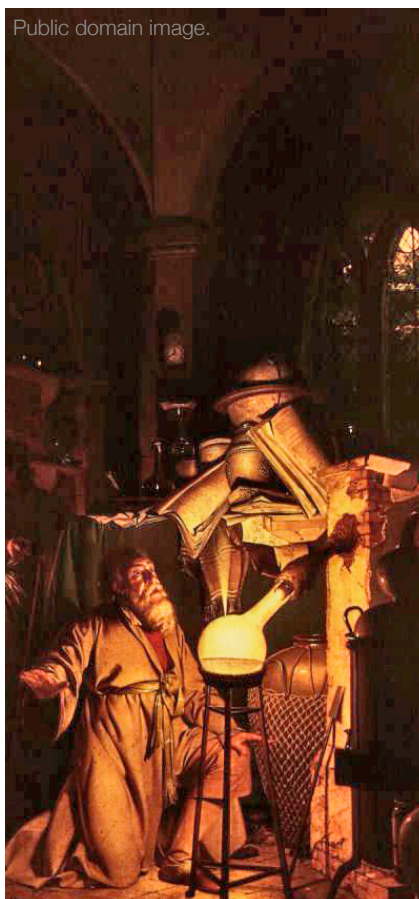
_____ He used the newly-invented electric battery to pass a current through liquid potash, breaking it down into its constituent elements. One of these was a new discovery: **potassium**.

Section

Chemistry

Name

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Discovering the Elements

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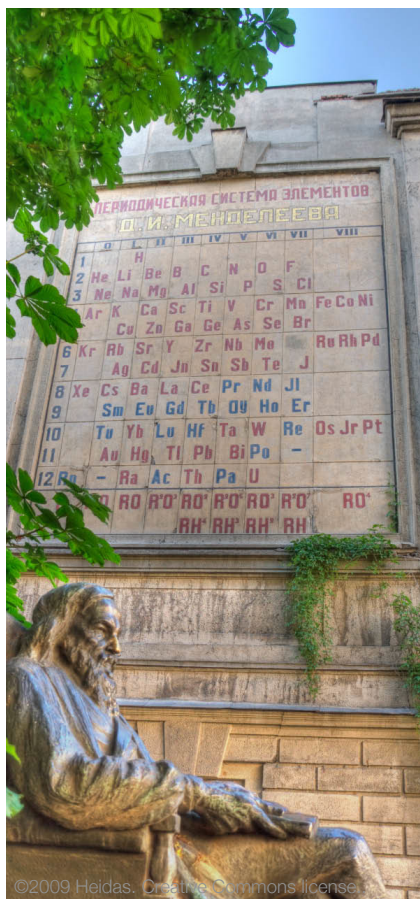
E He used the newly-invented electric battery to pass a current through liquid potash, breaking it down into its constituent elements. One of these was a new discovery: **potassium**.

Section

Answer Key

Name

Chemistry



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The Order of the Elements

Match the person with their discoveries.

- | | |
|------------------------------------|---------------------|
| A. Jöns Jacob Berzelius | F. Gustav Kirchhoff |
| B. Niels Bohr | G. John Newlands |
| C. Paul Emile Lecoq de Boisbaudran | H. Dmitri Mendeleev |
| D. Robert Bunsen | I. Henry Moseley |
| E. John Dalton | J. William Ramsay |

_____ He deduced, from the discovery that elements combine to form compounds in fixed proportions, that elements must be made of **atoms**, each with their own unique weight.

_____ Obsessed with measuring the **atomic weight** of every element, he also discovered **thorium**, **cerium**, **selenium**, and **silicon**.

_____ He noticed that chemical properties repeat, and formulated what we now know as the **Law of Periodicity**.

_____ He created an arrangement of elements that combined both their atomic weights and their chemical properties into one organization: the **periodic table**. Although only 63 elements had been discovered, he left gaps and predicted the properties of the missing elements.

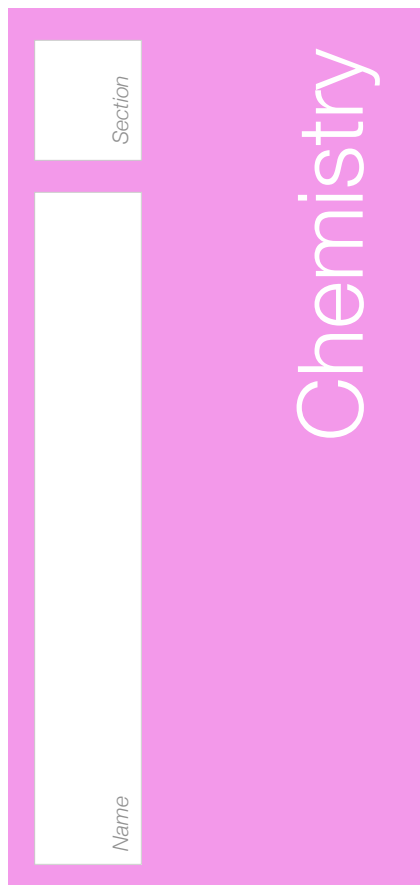
_____, _____ They invented the **spectroscope** and used it to discover **cesium** and **rubidium**.

_____ He used a spectroscope to discover **gallium**, which had exactly the properties predicted by the periodic table.

_____ He isolated **helium** on Earth, and discovered **argon**, **neon**, and **xenon**: the **noble gases**.

_____ His theory of **fixed electron shells** explained chemical properties by the number of electrons in an element's outer shell.

_____ He used X-rays to determine the number of protons in an atom's nucleus: the **atomic number**.





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The Order of the Elements

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The Power of the Elements

Match the person with their discoveries.

- | | |
|----------------------|------------------------|
| A. Phillip Ableson | F. Edwin McMillian |
| B. Wallace Carothers | G. Lise Meitner |
| C. Marie Curie | H. Thomas Midgley, Jr. |
| D. Friedrich Kekulé | I. Ernest Rutherford |
| E. Justus von Liebig | J. Friedrich Wöhler |

_____, _____ They discovered **isomerism** when one made silver fulminate and one made silver cyanate out of the same number of atoms of the same elements.

_____ He formulated the theory of **chemical bonds** while studying diamond and graphite.

_____ He discovered how to draw a fibre from the interface between two liquids, hexane-1,6-diamine and decanedioyl-dichloride, which could be spun into a very fine, very strong thread. This is **nylon**.

_____ He discovered that adding **tetraethyllead** to gasoline prevents engine knock. No one at the time realized that lead causes brain damage in growing children.

_____ She discovered two new elements while investigating radioactivity: **polonium** and **radium**.

_____ He discovered that the **structure of an atom** consists of a small, dense nucleus surrounded by empty space and an electron cloud. He also discovered that a nucleus can emit **alpha particles** and become a new element.

_____ She realized that discrepancies in the mass of a nucleus undergoing **nuclear fission** could be explained by matter converting to energy.

_____, _____ They used a cyclotron to create the world's first artificial element: **neptunium**.

Section

Name

Chemistry



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