


**Objective: SWBAT** describe features of Dalton's model of the atom and identify and describe the differences between elements and compounds.



1	2	3	4	5	6	7
<p>492-432 BC Empedocles</p> <ul style="list-style-type: none"> <li>- 1st time the word elements is used</li> <li>- 4 elements that make up the world           <ul style="list-style-type: none"> <li>- Fire</li> <li>- Air</li> <li>- Water</li> <li>- Earth</li> </ul> </li> </ul>	<p>460-370 BC Democritus</p> <ul style="list-style-type: none"> <li>- Hypothesized that if you cut matter into tiny pieces, you would eventually get to a piece you could not cut any smaller</li> <li>- He called this tiny piece "atoms" which means "indivisible."</li> <li>- This is where we get the word atom.</li> </ul>	<p>1660 Robert Boyle</p> <ul style="list-style-type: none"> <li>- States that elements are fundamental substances that cannot be broken down any further by chemical means.</li> </ul>	<p>1773 Joseph Priestley</p> <ul style="list-style-type: none"> <li>- Some substances can be broken down into two or more pieces.</li> <li>- Establishes the idea of compounded particles</li> <li>- Breaks apart water into its two parts.</li> </ul>	<p>1778 Antoine Lavoisier</p> <ul style="list-style-type: none"> <li>- Father of modern chemistry</li> <li>- named the two parts of water "hydrogen" and "oxygen" and establishes that the mass of the pieces equals mass of the whole.</li> <li>- Develops the law of conservation of mass.</li> </ul>	<p>Late 1700's Joseph Proust</p> <ul style="list-style-type: none"> <li>- Determines that when reactions happen to make new compounds that matter combines in defined ratios.</li> <li>- Develops the law of definite proportions.</li> </ul>	<p>1803 John Dalton</p> <p>4 tenants of Dalton's Atomic Theory</p> <ol style="list-style-type: none"> <li>1. Matter is composed of atoms.</li> <li>2. All atoms of a given element are identical and different from atoms of a different element.</li> <li>3. Reactions involve combining atoms. (Making compounds)</li> <li>4. Compounds arrange in whole number ratios, (cannot bond 1/2 an atom)</li> </ol>

**Atoms:** smallest unit of matter. A single unit of an element. ~ There are different types.

**Elements:** Fundamental substances that cannot be broken down by chemical means. 92 naturally occurring elements on earth.

**Compounds:** Combination of 2 or more atoms.

**Law of Definite Proportions:** Elements react in defined proportions. For compounds identity, must have same ratio of elements throughout the sample.

Example: Water ( $H_2O$ ) is always a 2:1 ratio of H to O.

**Law of Multiple Proportions:** Combinations of elements can form more than one compound. They must be combined differently in small whole # ratios.

Example:  $CO_2$ ,  $CO$  are different compounds, made up of same elements.  $CO_2$  is a 2:1 ratio O to C;  $CO$  is a 1:1 ratio O to C. (another ex:  $N_2O_4$  and  $NO_2$ .)

# Classification of Matter Graphic Organizer

