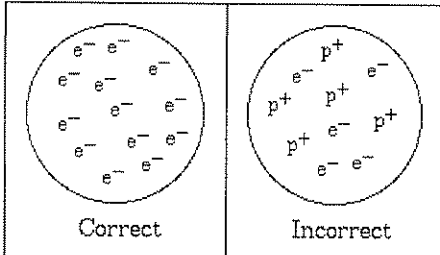
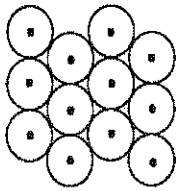
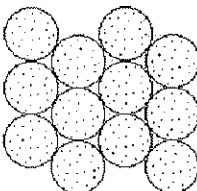


History of the Atom

For more check out: <http://particleadventure.org/particleadventure/index.html>

Year	Scientist(s)	Discovery
Greek Era	Democritus	All matter is composed of atoms, which are bits of matter too small to be seen. These atoms CANNOT be further split into smaller portions. Our word atom comes from <i>atomos</i> , a Greek word meaning uncuttable. He also said there is a void, which is empty space between atoms.
1803	John Dalton The Father of the Chemical Atomic Theory	Proposed the first true "atomic theory" based upon measurable properties of mass. Five basic parts to his theory: <ol style="list-style-type: none"> 1) chemical elements are made of atoms 2) the atoms of an element are identical in their masses 3) atoms of different elements have different masses 4) atoms only combine in small, whole number ratios such as 1:1, 1:2, 2:3 and so on. 5) atoms can be neither created nor destroyed <p>To Dalton, atoms were hard, featureless spheres, which must exist, but he had no knowledge of their inner structure.</p>
1897	J.J. Thomson	Used a cathode ray tube to experimentally determine the charge to mass ratio (e/m) of an electron = 1.759×10^8 coulombs/gram. His model is often referred to as Thomson's "plum pudding model," where the pudding represents the sphere of positive electricity and the bits of plum scattered in the pudding are the electrons. I like to call it the "blueberry muffin" model. All those round little blueberries surrounded by the bread of the muffin. (Ummmm, good!) Make sure you have the correct idea firmly in mind... The Thomson Model has negative particles (electrons) and a sphere of positive charge. There are NO protons in the Thomson Model of the atoms. Be careful, a teacher might try to trip you up on a test question. (Those teachers sure are evil, aren't they??)
		
1900	Max Planck	Showed that light energy could be thought of as particles for certain applications and called this quanta or photons. Also stated that particles of light have fixed amounts of energy that is directly proportional to the frequency of light
1909	Robert A. Millikan	His oil drop experiment determined the charge ($e=1.602 \times 10^{-19}$ coulomb) and the mass ($m = 9.11 \times 10^{-28}$ gram) of an electron. He later received the Nobel Prize for his efforts.
1909 - 1911	Ernest Rutherford (with help from Hans Geiger and twenty-year-old Ernest Marsden)	Using alpha particles as atomic bullets, he probed the atoms in a piece of thin (0.00006 cm) gold foil. He established that the nucleus was very dense, very small and positively charged. He also assumed that the electrons were located outside the nucleus. (He never used the word "nucleus" in his paper but instead "charge concentration.") Rutherford's Gold foil may have looked like this on an atom level:  Whereas with Thompson's model, it would look more like: 

		<p>Rutherford's Gold foil Experiment Set-up</p>	
1914	Henry Gwyn-Jefferies Moseley	Using x-ray tubes, determined the charges on the nuclei of most atoms. He wrote, "The atomic number of an element is equal to the number of protons in the nucleus". This work was used to reorganize the periodic table based upon atomic number instead of atomic mass.	
1919	Francis Aston	Discovered the existence of isotopes through the use of a mass spectrograph.	
1920	Ernest Rutherford	Proposes the name "proton" for the fundamental particle, which makes up the hydrogen nucleus. The word proton had been used from about 1908 as a general term for a building block from which all elements are built. He also proposes the existence of the neutron, an uncharged particle that is part of the nucleus.	
1922	Niels Bohr	Developed an explanation of atomic structure that underlies regularities of the periodic table of elements. His atomic model (often called the planetary mode) had atoms built up of successive orbital shells of electrons.	
1923	Louis Victor de Broglie	Discovered that electrons had a dual nature-similar to both particles and waves. Particle/wave duality. Supported Einstein.	
1927	Werner Heisenberg	Described atoms by means of formula connected to the frequencies of spectral lines. Proposed Principle of Indeterminacy - you cannot know both the position and velocity of a particle.	
1930	Schrodinger	Viewed electrons as continuous clouds and introduced "wave mechanics" as a mathematical model of the atom.	
1932	James Chadwick	Using alpha particles he discovered a neutral atomic particle with a mass close to a proton. Thus was discovered the neutron.	
1938	Lise Meitner, Otto Hahn, Fritz Strassman	Conducted experiments verifying that heavy elements capture neutrons and form unstable products which undergo fission. This process ejects more neutrons continuing the fission chain reaction.	
1941 - 51	Glenn Seaborg	Synthesized 6 transuranium elements and suggested a change in the layout of the periodic table.	
1942	Enrico Fermi	Conducted the first controlled chain reaction releasing energy from the atoms nucleus.	
1964	Richard Feynman and George Zweig	Independently propose the parton model for the structure of protons and neutrons. Partons come to be known as quarks... And study continues to this day.	