Student Sheet Name _____

Title: History of the Atom

Introduction: Our human understanding of the structure of atom developed over the course of centuries. Sometimes a discovery was made that was immediately accepted: other times the discovery was ridiculed by the community of scientists at the time. Even today, scientists must present their findings and convince other scientists of their value. Watch the video on Professor Dan Shectman. He discusses his work in 1984 that led to a Nobel Prize in 2011. Do not worry if you do not understand the chemistry involved, it is the process of science that is the important part of the video.

In this activity, you will investigate the work of famous scientists that laid the foundation of modern chemistry. Keep the video and Dr. Dan in mind, new discoveries are always taking place and scientists still have to convince others of their worth.

Directions:

1. You will be assigned to a group of 4 people who will research the work of a particular scientist and present your findings to the class in both a poster and an oral presentation. You will also create a worksheet for your classmates to learn about your scientist. Each person in your group will research a specific part of the scientist's life and work, according to the parts A, B, C, and D that are outlined in the rubric (next page). You will be graded individually for how well you complete your part (A, B, C, or D). The group will be graded based on the three products: the worksheet, poster, and presentation. The scientists are: Antoine Lavoisier, Joseph Proust, John Dalton, JJ Thomson, Robert Millikan, and Ernest Rutherford.

2. You will need to create a **worksheet,** not longer than two pages (one page front and back), for other students to complete while you are doing your presentation. The worksheet should be typed, include space for all of the necessary information (parts A, B, C, and D), and a picture of the apparatus used for the scientist's experiments. It should be a guide for note-taking, and therefore should require the student to write down the most important information, while providing some of the less important information so that they don't have to write too much (slowing down the presentation). The worksheet should be submitted to electronically as a Microsoft Word or PDF file one day before the class presentations.

3. Your **poster** should contain all of the information about your scientist and his experiments (parts A, B, C, and D) as well as pictures of the scientist, the experiment, and the model he contributed to. The information should be typed in legible font (at least size 24). The poster should be neat and organized. All sources used to gather information should be listed in MLA format in a bibliography. There should be at least 8 different sources. You can and should use your textbook. The poster is due on the day of the oral presentation.

4. Your oral **presentation** should last 8-10 minutes. Each member of the group should contribute equally to the oral presentation, presenting their assigned part (A, B, C, or D). Your oral presentation should follow the form of your worksheet so that the other students in the class will be able to complete their worksheets while you are speaking. You should be prepared to answer questions about your work.

History of the Atom Group Project

Individual Roles:

A. Vital Statistics
   i. When and where was the scientist born and die?
   ii. When did his most important experiments take place?
   iii. Who were his colleagues/competitors?
   iv. Were the discoveries accepted immediately?
   v. Picture of scientist

B. Historical Context
   i. What was known about matter/atoms when this person was doing his research?
   ii. What question(s) was this person trying to answer in their research?

C. Experiments
   i. How were this scientist's experiments set up in the lab?
   ii. How did the experiments work?
   iii. What predictions were made about the outcome?
   iv. Picture of experiment/apparatus

D. Results
   i. What were the results of the experiment?
   ii. What conclusions were drawn from those results?
   iii. How did these conclusions change our understanding of matter/atoms?
   iv. Picture of new atomic model

E. Model of Experiment
   i. If there is a fifth person in the group, he or she should make a 3-D model of the experimental setup.
   ii. Typed description of the apparatus and experiment should be attached to the model.