



### What are atoms?

#### Concepts:

- Atoms are the building blocks of matter.
- Atoms have three parts: protons, neutrons and electrons.
- Protons have a positive charge, are heavy, and move slowly.
- Neutrons have no charge.
- The nucleus is the center of an atom and consists of neutrons and protons packed together.
- Electrons have a negative charge. These particles attract each other and keep the atom together.

**Vocabulary Words:** protons neutrons electrons nucleus \*subatomic

**Construct and Read:** *Lots of Science Library Book #3.*

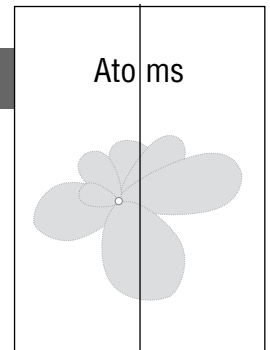
#### Activities:

##### Atoms – Graphic Organizer

**Focus Skill:** categorizing characteristics

**Paper Handouts:** a copy of Graphics 3A-E two 8.5” x 11” sheets of paper  
12” x 18” sheet of paper

**Graphic Organizer:** Make a Desktop Project from the construction paper. Cut Graphic 3A on the dotted line and glue it on the cover of the Desktop Project. Title it *Atoms*.



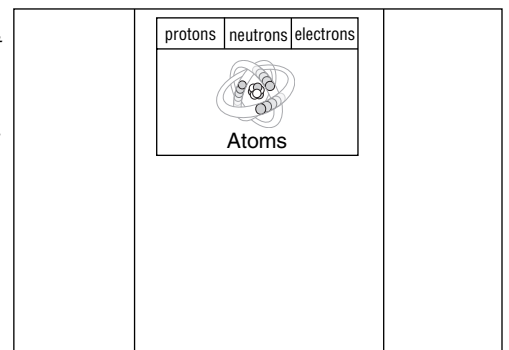
Cut out Graphics 3B-E, stack them in order, and staple on the left side. Label the left tab *protons*, the middle tab *neutrons*, and the right tab *electrons*.

On the *protons* page, color the protons red. On the *neutrons* page, color the neutrons blue. On the *electrons* page, color the electrons yellow.

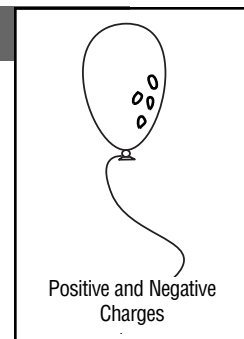
Complete . Write clue words about each part of an atom. protons: *in nucleus, positively charged, heavy, move slowly.* neutrons: *in nucleus, no charge.* electrons: *negatively charged, orbit nucleus in shells or levels.*

Describe each part of an atom on the appropriate page.

Glue the 3 Top Tab Book on the top, middle section in the Atoms Desktop Project. Store for future use.



## Positive and Negative Charges - Investigative Loop - Lab 3-1



**Focus Skill:** demonstrating a concept

**Lab Materials:** balloon paper hole punch

**Paper Handouts:** 8.5" x 11" sheet of paper copy of Lab Graphic 3-1  
Lab Book

**Graphic Organizer:** Make a Large Question and Answer Book. Glue it side-by-side to the Lab Book. Glue Graphic 3-1 to the left tab.

**Question:** Do like charges attract or repel?

**Research:** Read *Lots of Science Library Book #3*.

**Procedure:** Punch holes in the paper and spread the paper circles on a table. Rub an inflated balloon on your head several times. Hold the balloon close to the paper circles, but do not touch them. The paper circles are drawn to the balloon.

**Observations:** How did the paper circles react to the balloon? **The paper was attracted to the balloon.**

**Record the Data:** On the inside top section under the tab; write or draw your observations of the lab. **Teacher's Note: Your students may not know the charges that were created in this lab but may be aware that unlike charges caused the attraction. Explain the lab if needed: When you rub the balloon on your hair, it gives the balloon extra negative charges, by rubbing the electrons off of the hair. The positive charge in the paper is attracted to the negative charge on the balloon.**

**Communicate the Conclusions:** Demonstrate this lab to someone who did not participate in it with you. Ask him/her to predict what will happen to the paper circles before you put the balloon near them. Explain the conclusions of this lab.

**Conclusion:** What does this tell us about charges?

**Spark Questions:** Discuss any questions sparked by this lab.

**New Loop:** Choose one question to investigate further.

**Design Your Own Experiment:** Select a topic based upon experiences in the Investigative Loop. See page vii for more details.

## Experiences, Investigations, and Research

Select one or more of the following activities for individual or group enrichment projects. Allow your students to determine the format in which they would like to report, share, or graphically present what they have discovered. This should be a creative investigation that utilizes your students' strengths.



1. Research the Nobel Prize. Make a Four Door Book and report on the "what, when, who, and why" of the Nobel Prize. Make a timeline of Nobel Prize winners.



2. *Who's Who* Add John Dalton and J.J. Thomson to the *Who's Who* Book.



3. Research, sketch, and report on changes in the atomic model since it was first conceptualized by Democritus as an uncuttable atom.

