What is an Atom?

Fifth Grade
Activity: 2
Time: 1 Class Period

General Description
The teacher will introduce the basic structure of an atom. Students will explain how the number of protons is the identifier of the element. Students will practice how to find the number of neutrons by using the atomic mass and the periodic table.

Objectives
Students will identify the basic atomic structure of an element.
Students will use the Periodic table to find the number of protons, neutrons, and electrons of an element.
Students will identify specific elements using the Periodic Table.

Arizona State Standards
SC05 S5C1 PO1 Identify that matter is made of smaller units called:

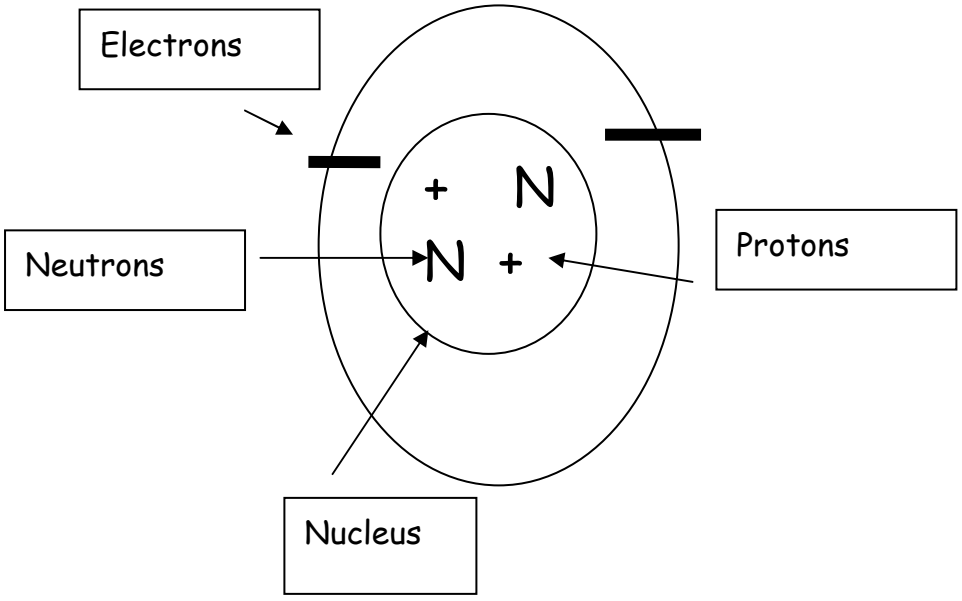
- molecules (e.g., H_2O, CO_2)
- atoms (e.g., H, N, Na)

Teacher Information
Everything we see, touch, smell, is made up of matter. All matter is made up of atoms. It is difficult for student to understand a concept that they can not see or touch therefore allowing them the opportunity to draw different atoms is helpful.

Materials
Teacher Notes - Activity Card 5-2a
Periodic Table of Elements - Activity Card 5-2b
Research sources
Internet sites
Construction Paper
Markers/colored pencils

Procedures/Exploration
1. Ask students what they think matter is. Write these ideas on the board.
2. Ask them if air is matter. Clarify that air is matter since it takes up space; use a balloon to prove this concept.
3. Explain that all matter is made up of atoms. These are particles that we can not see with our eyes.
4. Draw a simple atom of Helium on the board or over head for students to look at; see picture below. Include in the drawing the protons, electrons, neutrons and nucleus.
5. Using the periodic table show them how you knew what to draw. Relate the Periodic Table to a drawing manual.

6. Explain that each element has a specific number of protons; protons are positive particles of the nucleus.
7. Explain that the number of electrons always equals the number of protons.
8. Show them how to find the number of neutrons which is the number of protons subtracted from the atomic number.
9. Assign different elements to the students and have them draw them accurately.



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Teacher Notes

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Atom

- Every element has characteristics specific to that element.
- Elements are made up of many particles.
- One individual particle is called an atom.
- An atom has those specific characteristics of that element. An atom of the same elements will always have those same specific characteristics.
- Every atom is made of three parts, protons, neutrons, and electrons.
- Protons and neutrons make up the nucleus
    - Protons are positively charged
    - Neutrons have a neutral charge
- Electrons travel around the nucleus in shells.
- Electrons are negatively charged.
- Atoms are found in nature without a charge. They are considered to be neutral.

Protons' Jobs

- All atoms have a specific number of protons.
- The number of protons identifies the element from which the atom comes from.
- Atomic number signifies the number of protons.
- Protons and Neutrons: Together they equal the mass number, sometimes called the atomic mass.
    - ✓ Have the students identify an element by its atomic number.
    - ✓ Have students determine the number of protons in a particular element. Give them the following formula: atomic mass minus the atomic number will give the number of neutrons.
- An element's atomic number will never change, if there is a different atomic number than you have a different element.
- Atomic mass can vary from atom to atom of the same element. The atomic mass varies due to the variation of neutrons. These variations are called isotopes.

Symbols

- Chemical symbols are used to denote specific elements without have to write out the whole name.
- Have students' practice finding the symbols for different elements. You can do this as a game such as "popcorn" or just call on students.

Periodic Table

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