

Student Page

Title: Atomic Model Construction

Introduction: Models are a good way to see something physically that may be difficult to imagine. You will build one type of atom, its isotope and an ion. You will then compare it to those of your classmates. Predict below what you think will happen as the atomic numbers of the atoms increase:

Prediction/Hypothesis:

If we increase the atomic number of the atom,

Then by changing _____ and measuring _____

[INDEPENDENT VARIABLE]

_____, I predict that _____

[DEPENDENT VARIABLE]

[Prediction of results. Be specific. Do not simply state that there will be an effect]

Because _____

[Scientific phenomenon to support your prediction. Cite evidence from your textbook.]

Procedures:

1. Find out what your assigned Atom, Ion, or Isotope will be. Write it here _____.
2. Find the number of protons, neutrons, and electrons in the your atom.
3. Construct a three dimensional model of the atom using the styrofoam ball as the nucleus with the appropriate number of small objects (pompoms, for example) attached to it to represent protons and neutrons. The electrons are attached to the rings in the configuration matching the electron arrangement of the atom as calculated by the student.
4. After your model is created, display it according to your teacher's instructions.
5. After all models have been displayed, begin making your observations and collecting data.

Data

Pick any three atoms from the models displayed and create a drawing each below.

Elements name and atomic number →			
Atom			
Ion			
isotope			

Analysis

In an essay format discuss your observations.

1. Your first paragraph should contain and analysis of your observations about the relative size of the atoms.
2. Your second paragraph should contain and analysis of your observations about the ions compared to the atoms.
3. Your third paragraph should contain an explanation about the location of the protons, neutrons, electrons in the atom.
4. Your 4th paragraph should contain an analysis of your observations and a comparison between the atom and the isotope of the same elements, then discuss how atoms and isotopes are similar and different among several different elements.
5. How does an elements atomic number relate to the number of protons in an element? Does this differ with isotopes or ions? What relationship can you observe between protons and elements?

Conclusion: