

PhET Simulation: Build an Atom

Go to the following website:

https://phet.colorado.edu/sims/html/build-an-atom/latest/build-an-atom_en.html

First, click on “Atom” to explore the sim and learn the features.

- Add protons, neutrons, and electrons to the atom. The sim automatically tells you the element’s identity based on the particles you add.
- Experiment with the number of particles you add to make neutral atoms as well as ions. The orange and white circular arrow button will reset the model so you can start again with new combinations.

Next, click on “Symbol.” You are still manipulating the subatomic particles in the same way, but instead you see a periodic table and a periodic square.

- Add different amounts of protons, neutrons, and electrons to the atomic model. See how the elements are highlighted in the periodic table based on the particles you add.
- Watch the periodic square as you work with the sim. There are three numbers on the square that change based on particles you add or remove.

1. What do the numbers on the periodic square represent?

(answer: top left is atomic mass, bottom left is atomic number, top right is electrical charge)

2. If you add 3 protons, 4 neutrons, and 3 electrons to the atomic model, what element did you create? Is it a neutral atom or an ion? What is its atomic mass?

(answer: lithium; neutral atom; atomic mass is 7AMU)

3. When you change one factor on the atom, the element’s identity changes. What is that factor?

(answer: number of protons)

Now that you are familiar with the simulation, click on “Game.” There are four different games. Play each one at least once. List your high score for each game below.

Game 1:

Game 2:

Game 3:

Game 4:

(answer: points are out of 10 so students will list scores, example 9/10)