

Build an Atom Phet simulation

Name: _____

Explore the Build an Atom simulation: **Atom**. As you explore, think about what you find.

1. Explore adding and taking away protons, neutrons, and electrons. What particle(s) are found in the center of the atom?

2. Explore until you discover which particle determines the name of the element you build?

3. What is the name of the following atoms?

a) An atom with 3 protons and 4 neutrons: _____

b) An atom with 2 protons and 4 neutrons: _____

c) An atom with 4 protons and 4 neutrons: _____

4. How many protons do you need to make carbon (C)? _____

5. How many protons do you need to make hydrogen (H)? _____

6. Explore the simulation to discover which particles affect the net charge of an atom or ion.

a) What two things have to be equal for the net charge be at zero? _____

*For b and c fill in the blank with more or less:

b) For the net charge to be **positive**, there needs to be _____ protons than electrons.

c) For the net charge to be **negative**, there needs to be _____ electrons than protons.

d) How many electrons can fit in the first (inner) circle? _____

7. Explore the simulation to discover: What two particles affect the mass number of the atom?

8. List two things you observed in the simulation. _____

Click on the "Symbol" icon at the bottom of the page. As you explore, think about what you find.

1. Add 2 protons and 2 neutrons to the atom and fill in the box on the left below with what you end up with (all information).

1.b) Add 2 electrons to the atom and fill in the box below (on the right).

2. **Reset.** Add 6 protons, 6 neutrons, and 6 electrons to the atom and fill in the box below with what you end up with (all information).

3. Take away one electron from what you did for #2. What number (with the charge) ends up in the upper right hand corner? _____

a. Based on this, what type of charge do you think an electron has? Positive or negative?

b. Based on this, does a proton have a positive or negative charge? _____

c. What happens to the number in the upper left corner if you take 2 neutrons away?

d. Did taking the neutrons away affect the net charge (upper right corner)? _____

4. Please fill in the spaces (on the left) with the letter for what each space represents.

<div style="border: 1px solid black; width: 100%; height: 100%; display: flex; flex-direction: column; align-items: center; justify-content: center;"> <div style="border-bottom: 1px solid black; width: 20%; margin-bottom: 10px;"></div> <div style="border-bottom: 1px solid black; width: 20%; margin-bottom: 10px;"></div> <div style="border-bottom: 1px solid black; width: 20%; margin-bottom: 10px;"></div> <div style="border-bottom: 1px solid black; width: 20%; margin-bottom: 10px;"></div> <div style="border-bottom: 1px solid black; width: 20%; margin-bottom: 10px;"></div> </div>	<ol style="list-style-type: none"> Mass number Net charge Symbol # of protons
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