



Interactive Atom Diagram

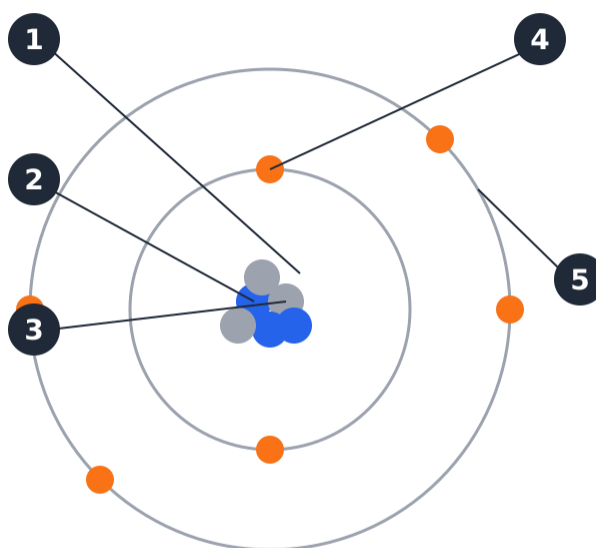
Companion worksheet — complete this as you explore the interactive diagram.

Name: _____ Date: _____

Part A — Label the atom

Use the interactive diagram to help you identify each numbered part. Write your answers using the word bank below.

Tip: click each part in the interactive diagram — the info panel that appears uses the same vocabulary you need for this page.



Word bank: nucleus · proton · neutron · electron · electron shell

1. _____
2. _____
3. _____
4. _____
5. _____



Part B — Particle properties

Fill in the table below using what you learn from clicking each part of the diagram.

Particle	Charge	Location	Relative mass
Proton			
Neutron			
Electron			

Part C — Explore different elements

Use the element picker in the interactive diagram to look up each element below, then fill in the table.

Element	Protons	Electron shells used	Electrons in outer shell
Carbon			
Neon			
Sodium			
Argon			
(pick any element)			

Quick check

Electrons have almost no mass compared to protons and neutrons, yet they take up nearly all the physical space in an atom. Based on what you've seen in the diagram, why might that be?



Part D — Reflection

Why does the number of protons determine what element an atom is, while the number of neutrons can be different for atoms of the same element?

Bonus — Draw your own

Pick any element in the interactive diagram and sketch it below. Label the nucleus, at least one proton and neutron, and each electron shell.

Element I chose: _____



TEACHER ANSWER KEY — remove or skip this page before printing for students

Part A — Labels

1. Electron shell
2. Proton
3. Neutron
4. Electron
5. Electron shell (outer)

Note: labels 1 and 5 both point to shell rings — accept "electron shell" for either. Label 2 points to a blue particle (proton), label 3 to a gray particle (neutron), label 4 to an orange particle (electron).

Part B — Particle properties

Proton — Charge: +1 | Location: nucleus | Relative mass: 1

Neutron — Charge: 0 (neutral) | Location: nucleus | Relative mass: 1

Electron — Charge: -1 | Location: electron shells (outside nucleus) | Relative mass: $\sim 1/1836$ (negligible)

Part D — Sample answer

Protons determine an atom's identity because the number of protons (atomic number) is how elements are defined and ordered on the periodic table — change the proton count and you have a different element. Neutrons add mass but don't change the element's identity, so atoms of the same element can have different neutron counts; these are called isotopes.

Teaching notes

- This diagram uses a simplified Bohr-style shell model (2-8-8-18 filling), which is standard for introductory chemistry but doesn't reflect real quantum subshell filling for transition metals — worth mentioning if students ask about elements past Calcium.
- Part C intentionally leaves the last row open ("pick any element") so students engage with the picker rather than only copying pre-set answers.