

Name:

Date:

Happy Atoms Curriculum

Student Workbook

Lesson 1: Exploring Atoms

Key Terms:

- **Atom:** _____
- _____
- **Nucleus:** The center of an atom, made up of protons and neutrons.
- **Electron:** A small negatively-charged particle found in the shell surrounding an atom's nucleus.
- **Valence electron:** An electron in the outermost shell of an atom's nucleus, the farthest from the nucleus that it can be.
- **Periodic table:** A table that arranges elements based on their atomic number.

Engage:

Tear up the provided sticky note into the smallest piece that you can. How small do you think you can get the sticky note to be? What do you observe as your sticky note gets smaller?

Explore:

After your classroom discussion about what an atom is, write the definition in the space provided in the "Key Terms" section above.

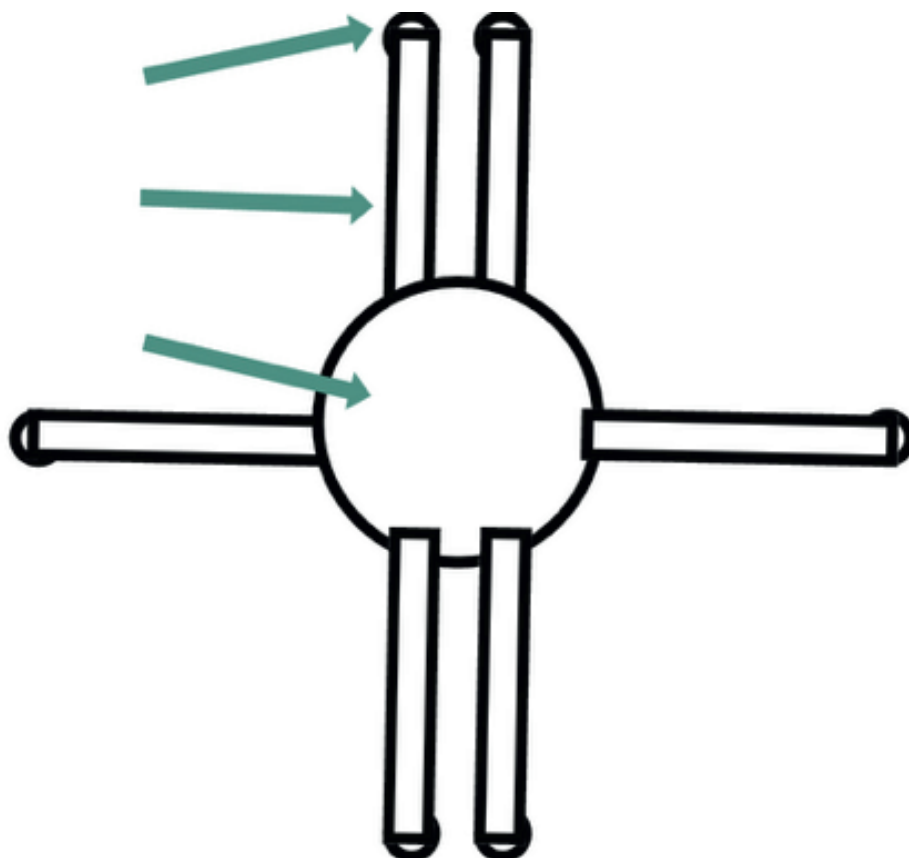
Turn to **page 1** of the quickstart guide and experiment manual and check that you have all the atoms listed in the "**Unboxing the Atoms**" section.

Now, take some time to explore the Happy Atoms kit. Test how the pieces connect and brainstorm how you might use the models to learn. Record any notes, observations, or questions you have in the space provided on the following page.



First thoughts, questions, and observations about Happy Atoms:

Now that you've explored the kit, label the atom diagram below, noting what you think each part of the model represents. Use the manual as a resource.



Explain:

After listening to your teacher's overview of the atom model, update your diagram as necessary:

1. Write in the correct term for each part under your guess.
2. In one color, circle any parts seen on the Happy Atoms model.
3. Use different colors to draw in and label any parts that are not shown on the model.



Elaborate:

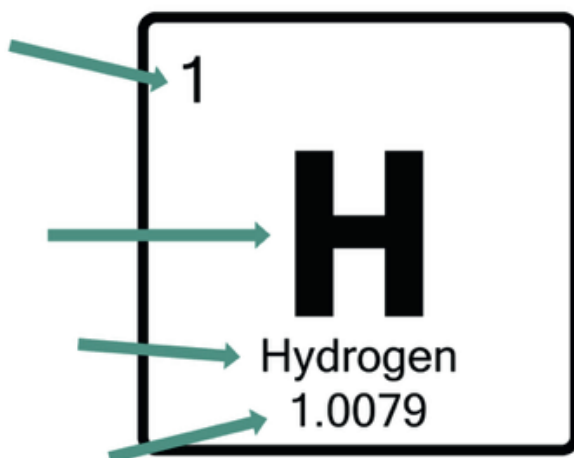
Turn to **page 8** in the manual and complete **Experiment 1**, answering the questions below as you go.

How similar were your groupings to how the atoms ended up laid out on the poster?

What patterns do you notice about the number of arms and the placement of the element on the periodic table?

What do the metal tips on the end of each arm represent?

After listening to your teacher's explanation about how to read the periodic table of elements, label the parts in the diagram below:





Now, practice reading the atom information by completing the periodic table below. Mark down the symbol, name, and atomic number for each element in the Happy Atoms kit. You can also color in the periodic table to match the colors of the Happy Atom models for easier reference.

Evaluate:

What is a valence electron?

How are valence electrons represented on the Happy Atoms models?

Extend:

Pick a Happy Atoms model and draw the atom in a diagram that shows the nucleus and electrons. Use a Happy Atoms model to determine how many of the electrons are valence electrons and add an outline in a different color around them.