

Atomic Ornament

At the MagLab, our extremely powerful magnets allow us to see, manipulate and measure the building blocks that make up our universe.

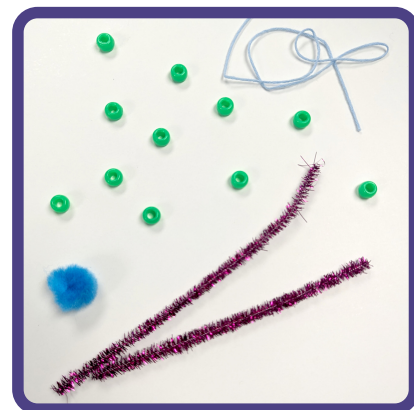
Everything is made of atoms-- matter that cannot be broken down into smaller units by chemical means. Each atom has the same atomic ingredients: protons, neutrons, and electrons. The protons and neutrons hang out in the atom's center, or nucleus, and the electrons zoom around it. An atom's structure is key to understanding what form an element takes and what other elements it will bond with.

This fun craft project demonstrates an atom's basic structure as you create your own atomic ornament for Holiday-time or just anytime you want to celebrate science.



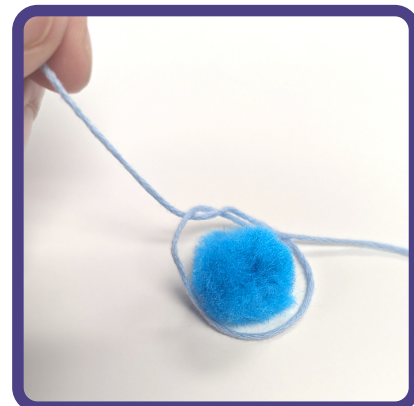
What You'll Need

- 1 Craft pop-pom
- 1 Pipe cleaner
- 3-10 Beads
- 1 paper clip
- 8-12 inch piece of String
- Scissors
- Atomic Element Cards (page 3)



Instructions

1. Pick an atomic element card: Lithium, Carbon, Nitrogen, or Neon.
2. The pom-pom will be the atom's nucleus. Tie the string around the pom-pom, near the middle of the string. It doesn't need to be exact. Do not trim the string.
3. All four atoms have two rings (inner ring and outer ring) that orbit the atom's nucleus. Count how many electrons are on each ring. For example, Neon has two electrons for the inner ring and eight electrons for the outer ring.



4. The pipe cleaner will be the orbital rings. Cut a pipe cleaner into two pieces. One piece should be about 5 inches long, making the other roughly 7 inches.

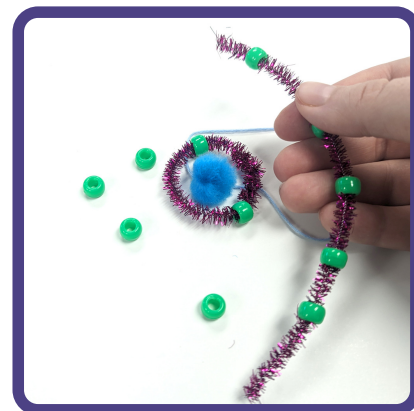
5. The smaller piece of pipe cleaner is the inner ring. The beads will be our electrons. Put the number of electrons onto the pipe cleaner and then curve it into a circle. Repeat that process with the outer ring.

6. Place the inner ring around the nucleus (the pom-pom). Wrap the string on each side around the pipe cleaner so that the nucleus floats in the center of the ring. Repeat that process with the outer ring.

7. Tie a knot on each end to hold the rings in place.

8. Bend the paper clip into a hook.

9. Tie one end of the string to the hooked paper clip. Trim off the extra string at the bottom of the atom.



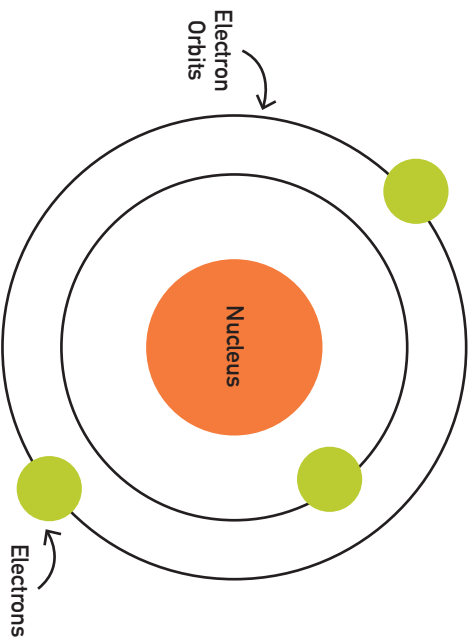
Did you know?

- The nucleus of protons and neutrons is only a tiny fraction of the overall size of the atom. If the nucleus were the size of Earth, the radius of the atom would stretch all the way to the sun.
- While only 92 elements occur in nature, scientists have produced at least 23 heavier elements in the lab using nuclear reactions. Plutonium, which has 94 electrons, is one such element.

Lithium



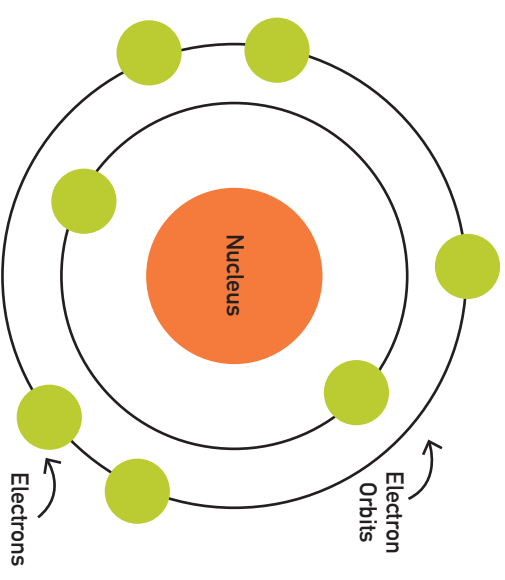
Lithium is a soft silvery metal often used in batteries.



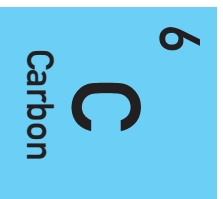
Nitrogen



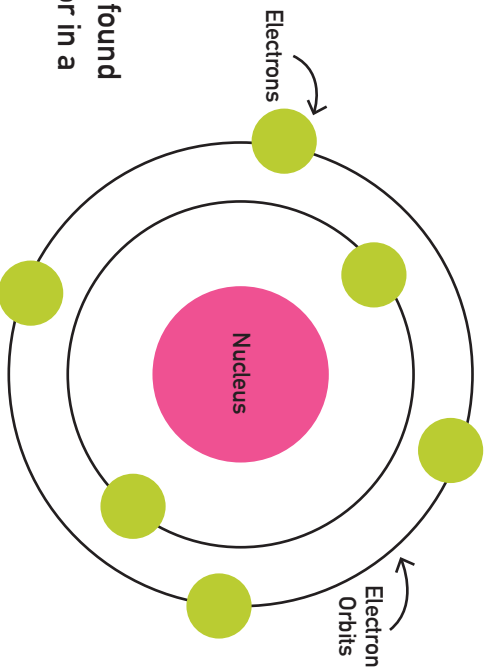
Nitrogen gas makes up about 78% of the Earth's atmosphere.



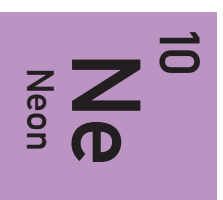
Carbon



Pure carbon can be found a pencil's graphite or in a beautiful diamond.



Neon



Neon is a colorless gas that glows orange when placed in an electric field.

