

# The Structure of an Atom

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Please write down what is underlined and draw pictures as instructed on slides

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# Today's Goals

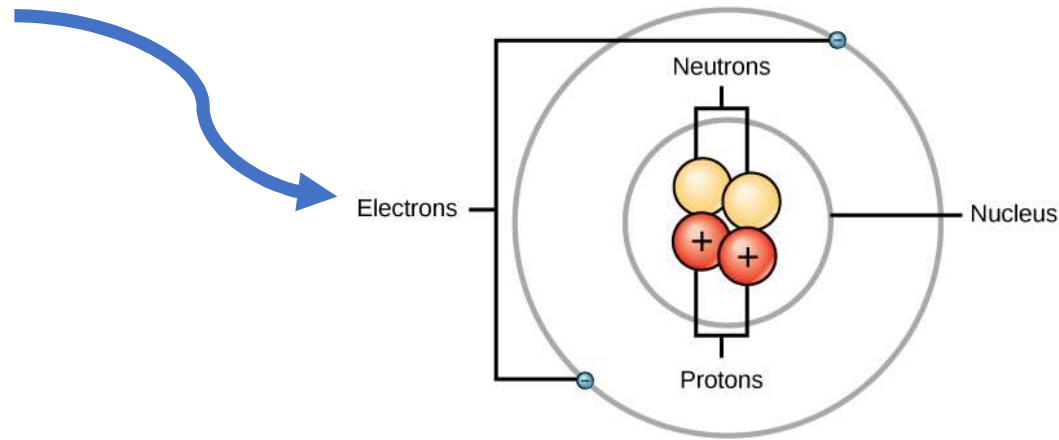
Today's goals are to:

- Get an overview of the properties of subatomic particles.
- Distinguish between the properties of protons, electrons, and neutrons.
- Distinguish between atoms of one element from another.
- Discover the differences between two isotopes of the same elements.

# Structure of an Atom

Please draw this picture and label the parts! (note that the picture is not to scale)

1. Note the location protons, neutrons, and electrons.
2. Note that electrons are much smaller than protons and neutrons. The drawing is not to scale. Electrons are tiny!



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# Subatomic Particles

- Protons: Positively charged subatomic particles in the nucleus
- Electrons: Negatively charged subatomic particles outside the nucleus. (An orbital is a region of space around the nucleus where an electron may be found).
- Neutrons: Neutral subatomic particles inside the nucleus (neutral means no charge).

*Now go back and look at your pervious notes on this topic (guided notes from 12/4) and make sure you're familiar with the approximate mass and charge of each particle.*

# What is the Atomic Number?

- Atomic number is a means to distinguish elements.
- Atomic number corresponds to the number of protons in an atom.

# Atomic Mass

Atomic mass is determined by adding the protons and neutrons in the nucleus of an atom.

Atomic Mass = protons + neutrons

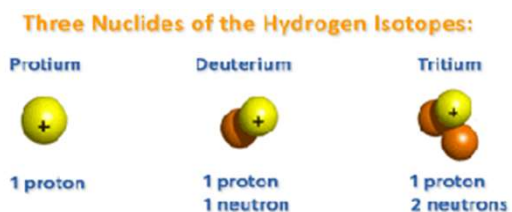
So how do you figure out the number of neutrons?

Number of Neutrons = Mass number – Atomic number

- We will practice this!

# Isotopes

- Dalton's theory stated that each element has identical atoms.
- We now know Dalton was not correct due to the existence of isotopes.
  - **Isotopes** are atoms of the same element that have a different number of neutrons and different mass numbers.
  - Isotopes: isos ("equal") and topos ("place"). So, isotopes of the same element are in the same position on the periodic table.



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Now: A little bit of thinking for your homework (We will go over them tomorrow)

Answer the following two questions in your notes.

Please write the questions down so you could use them for studying.

- 1) Name a property that protons and electrons have that neutrons do not.
- 2) An atom that has a mass number of 10 and atomic number of 12. Is this scenario possible? Why or why not?