

5 • What Do Atoms Look Like?

THE NUCLEAR ATOM

Answer the following questions by looking at the **Schematic Diagrams for Various Atoms** and discussing with your partners.

- How many **protons** are found in ^{12}C ? ^{13}C ? $^{13}\text{C}^-$?
- How many **neutrons** are found in ^{12}C ? ^{13}C ? $^{13}\text{C}^-$?
- How many **electrons** are found in ^{12}C ? ^{13}C ? $^{13}\text{C}^-$?
- Based on the model,
 - what do all carbon atoms (and ions) have in common?
 - what do all hydrogen atoms (and ions) have in common?
- What is the significance of the atomic number, Z, above each atomic symbol in the periodic chart?
- What do all nickel (Ni) atoms have in common?
- How is the mass number, A, (left-hand superscript next to the atomic symbol) determined?
- What structural feature is different in isotopes of a particular element?
- What feature distinguishes a neutral atom from an ion?
 - How is the charge on an ion determined?
- Where is most of the mass of an atom, within the nucleus or outside of the nucleus? Explain your reasoning.
- Complete the following table:

Isotope	Atomic Number Z	Mass Number A	Number of electrons
^{31}P	15		
^{18}O			8
	19	39	18
$^{58}\text{Ni}^{2+}$		58	