

ATOMIC STRUCTURE BUILD-A-MODEL CARDS

✂ Cut along the dotted lines to use as build-a-model cards.

PROTON



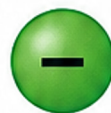
- Charge: +1
- Location: nucleus
- Mass: ~1 amu

NEUTRON



- Charge: 0
- Location: nucleus
- Mass: ~1 amu

ELECTRON



- Charge: -1
- Location: electron cloud (shells)
- Mass: ~0 amu

PARTICLE KEY



Proton



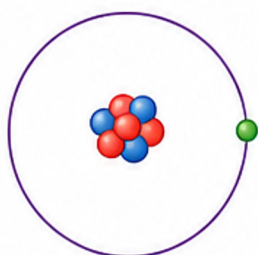
Neutron



Electron

SHELL 1

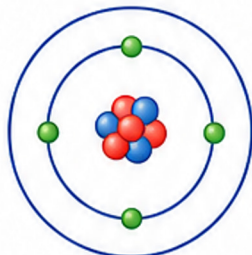
$n = 1$



Max electrons: 2
Closest to nucleus

SHELL 2

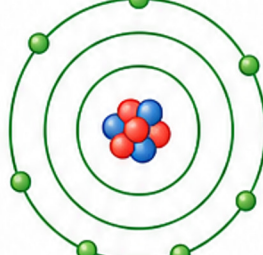
$n = 2$



Max electrons: 8
Middle shell

SHELL 3

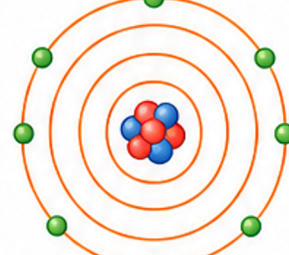
$n = 3$



Max electrons: 8
Further from nucleus

SHELL 4

$n = 4$



Max electrons: 18
Furthest common shell

ATOMIC NUMBER



The number of protons in the nucleus.

Determines the element.

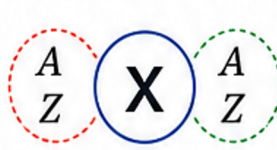
MASS NUMBER



The total number of protons and neutrons in the nucleus.

$A = \text{protons} + \text{neutrons}$

ISOTOPE



Atoms of the same element (same Z) with different mass numbers (A).

NEUTRAL ATOM

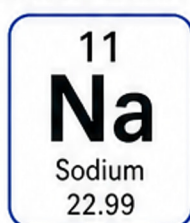


Number of protons equals number of electrons.

MODEL CHECKLIST

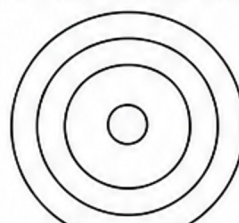
- Correct number of protons?
- Correct number of neutrons?
- Electrons in the right shells?
- Is the atom neutral?

ELEMENT EXAMPLE



Atomic number (Z) = 11
Mass number (A) \approx 23

BUILD & RECORD



Build your atom.
Record numbers and check.

INVESTIGATION PROMPT



How does changing the number of neutrons affect the atom?