

# Atomic Structure

atoms - smallest part of a substance that still retains all the properties of that substance

Inside the atom - it's mostly empty space w/ tiny, very dense nucleus & electrons

## Subatomic Particles

Particle	Location	charge	actual mass (kg)	relative mass
electron ( $e^-$ )	$e^-$ cloud	1 -	$9.11 \times 10^{-31}$	1
protons ( $p^+$ )	nucleus	1 +	$1.673 \times 10^{-27}$	1836 x's bigger
neutron ( $n^0$ )	nucleus	0	$1.675 \times 10^{-27}$	1839 x's bigger

Atomic Number - identify an element  
= #  $p^+$  in an atom  
= #  $e^-$  in an atom

mass Number - sum of the  $(p^+)$  &  $(n^0)$  in the atom

$$\# n^0 = \text{mass number} - \text{atomic number}$$

### Examples

(1) H-3

$$\begin{aligned}\# p^+ &= 1 \\ \# e^- &= 1 \\ \# n^0 &= 3 - 1 = 2\end{aligned}$$

(2) Ds - 272

$$\begin{aligned}\# p^+ &= 110 \\ \# e^- &= 110 \\ \# n^0 &= 272 - 110 = 162\end{aligned}$$

(3) Mo - 96

$$\begin{array}{r} 42 \\ + 54 \\ \hline 96 \end{array}$$
$$\begin{aligned}\# p^+ &= 42 \\ \# e^- &= 42 \\ \# n^0 &= 54\end{aligned}$$

(4) V - 50

$$\begin{array}{r} 23 \\ + 27 \\ \hline 50 \end{array}$$
$$\begin{aligned}\# p^+ &= 23 \\ \# e^- &= 23 \\ \# n^0 &= 27\end{aligned}$$