

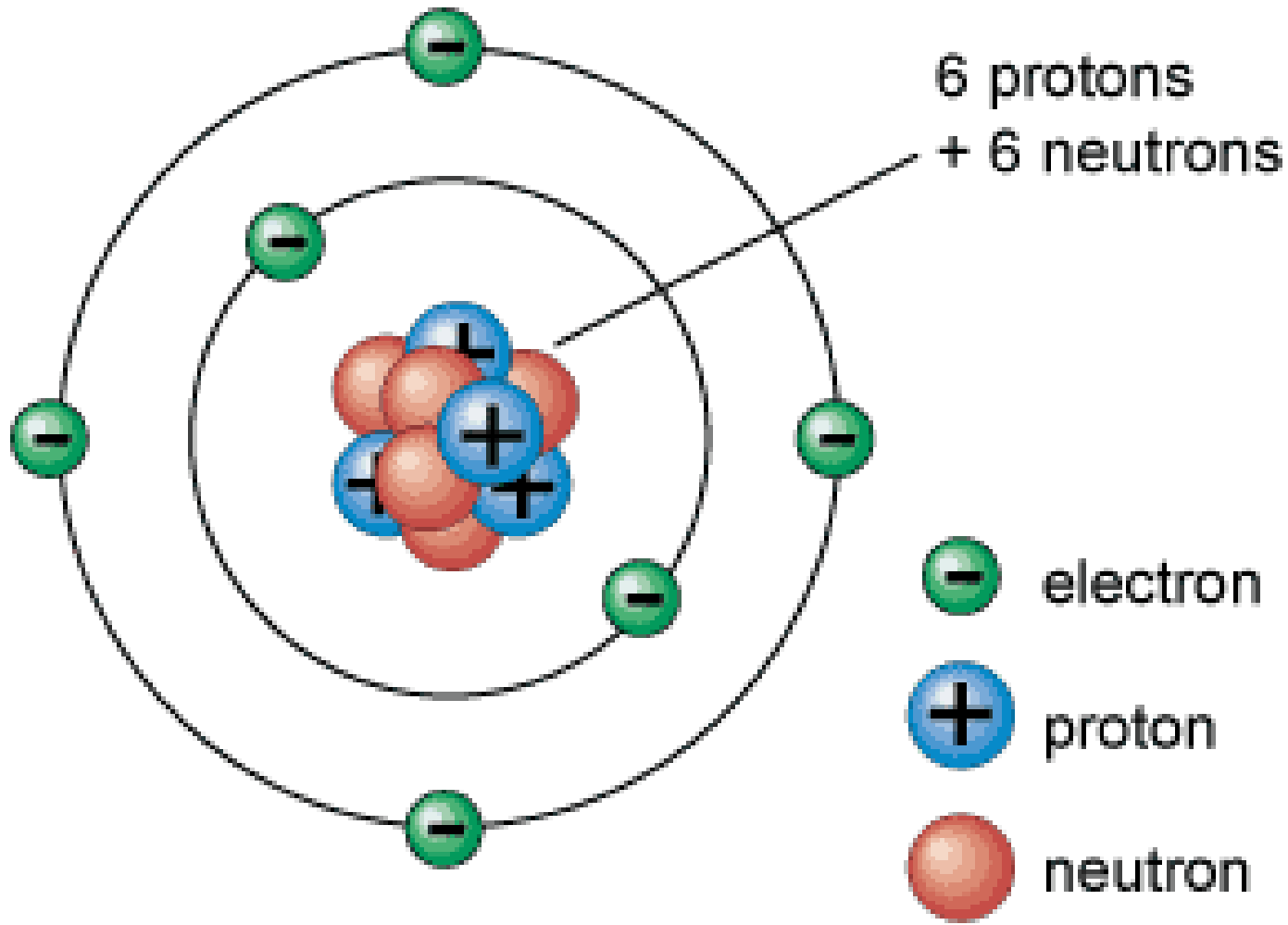
# Structure of an atom

A decorative graphic consisting of a solid teal horizontal bar that spans the width of the slide. Below this bar, on the right side, there are several horizontal lines of varying lengths and colors, including teal and white, creating a layered, stepped effect.

# Structure of an Atom

- Atoms consist of three smaller subatomic particles called the proton, neutron and electron

Subatomic particle	Location	Mass	Charge
Proton	Nucleus	1 amu	positive +
Neutron	Nucleus	1 amu	No charge
Electron	In orbit	Negligible (very small)	negative -



Carbon atom

# Structure of an Atom

- Each element has a **different** number of protons, neutrons and electrons which gives it unique physical and chemical **properties**
- **Atomic Number**
  - = number of **protons**
  - = number of **electrons**
- **Mass Number**
  - = number of **protons** + number of of **neutrons**
  - = all the heavy **particles** (the **nucleus**)

Therefore to determine the number of neutrons we can use the following equation:

$$\begin{array}{rcl} \# \text{ neutrons} & = & \text{mass \#} - \text{atomic \#} \\ & & \text{(protons +} & \text{(protons)} \\ & & \text{neutrons)} & \end{array}$$

# Standard Atomic Notation

39 -----> mass # (larger number)

**K** -----> chemical symbol

19 -----> atomic # (smaller number)

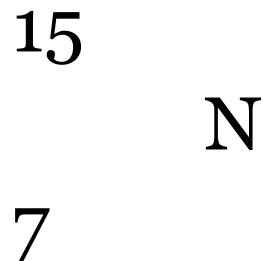
Therefore a **potassium** atom contains:

- $\frac{19}{19}$  protons (atomic number)
- $\frac{19}{19}$  electrons (same as # of protons)
- $\frac{20}{20}$  neutrons (mass number – atomic number)

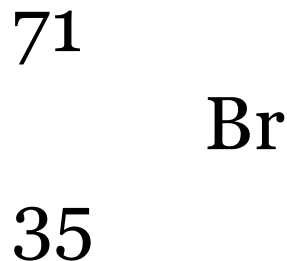
# Question

Write the **atomic notation** for the following:

- a) An atom of nitrogen with 7 protons and 8 neutrons



- a) An atom of bromine with 35 protons and 36 neutrons



# Fill in the following table:

<b>Symbol</b>	<b>Atomic Number</b>	<b>Mass Number</b>	<b>Number of Protons</b>	<b>Number of Neutrons</b>	<b>Number of electrons</b>
Br					
O					
Li					
	21				
		59	27		
		65			
		201		121	
					17



# Answers:

<b>Symbol</b>	<b>Atomic Number</b>	<b>Mass Number</b>	<b>Number of Protons</b>	<b>Number of Neutrons</b>	<b>Number of electrons</b>
Br	35	80	35	45	35
O	8	16	8	8	8
Li	3	7	3	4	3
Sc	21	45	21	24	21
Co	27	59	27	32	27
Zn	30	65	30	35	30
Hg	80	201	80	121	80
Cl	17	35	17	18	17