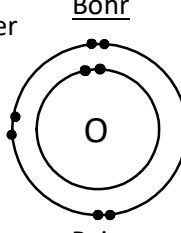

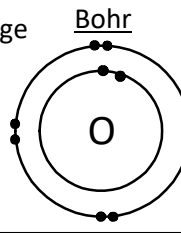
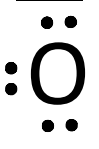


C11 - 1.1 - Atomic Theory: Atom or Ion # Atoms

Protons: Positive charge p^+
 Electrons: Negative charge e^-
 Neutrons: No charge n^0

Valence electron: electrons in Outermost Shell
 Closed shell (Stable): a shell with its maximum number of electrons. Goal!

<u>Atom - Uncharged</u>		Oxygen Atom: O	<u>Ion - A charged particle</u>		Oxygen Ion: O^{2-}
Atomic Number	Bohr	Lewis	Ion Charge	Bohr	Lewis
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> 8 Oxygen 16.0 </div>			<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> 8 2 - Oxygen 16.0 </div>		
Atomic Mass	Pairs	Lewis: Only valence electrons	Electrons have a negative charge: Losing an electron -> positive charged ion Gaining an electron -> negatively charged ion		
# of protons = atomic number = 8 (This number never changes)		# of electrons = # of protons = 8		# of electrons = # of protons - charge # = 8 - (-2) = 10	
# of neutrons = Atomic Mass - # of protons = 16 - 8 = 8		$\#p^+ = A\# = \#e^-$ $\#n = Am - \#p^-$	$\#e^- = \#p^+ - \text{charge}$	Lost electrons Lewis Empty	
An elements ionic charge is exactly the number of electrons it needs to give up or accept or share in order to have a full valence shell*			Row # = # of electron shells # electrons in shell = # elements in row Max in shell = 2,8,8,18,18...		

How many atoms in a molecule(s)?

Atoms : Molecules Ratio

Li_2O	$Li: 2$ $O: 1$	$1 \text{ molecule } Li_2O \times \frac{2 \text{ atoms } Li}{1 \text{ molecule } Li_2O} = 2 \text{ atoms } Li$ $1 \text{ molecule } Li_2O \times \frac{1 \text{ atoms } O}{1 \text{ molecule } Li_2O} = 1 \text{ atoms } O$	Useful Math! Given \times Conversion factor
---------	-------------------	--	--

$Li(OH)$	$Li: 1$ $O: 1$ $H: 1$	$(H_2O)_2$	$H: 4$ $O: 2$	Multiply Inside Brackets by Outside Subscript
----------	-----------------------------	------------	------------------	---

$3Li_2O$	$Li: 6$ $O: 3$	Multiply by Coefficient	$4(H_2O)_2$	$H: 16$ $O: 8$
----------	-------------------	-------------------------	-------------	-------------------

How many molecules of Fe_2O_3 if you have 6 atoms of Fe?

$$6 \text{ atoms } Fe \times \frac{1 \text{ molecule } Fe_2O_3}{2 \text{ atoms } Fe} = 3 \text{ molecules } Fe_2O_3 \quad \text{Obviously!}$$