

## Chemistry Foundations

### 1. Atomic Structure

	proton	neutron	electron
Mass	1	1	0
Charge	+	0	-
location	nucleus	nucleus	outside nucleus

Atomic Number - number of protons

e.g.  ${}^6_6\text{C}$  Carbon  
 ↑  
 at. #

Atomic Mass Number = #p + #n

${}^{12}_6\text{C}$       6p + 6n = 12 (at. #)

Isotopes - Atoms (similar) but different #n (or mass)

e.g. Carbon-14

${}^{14}_6\text{C}$

How many neutrons?

8

Example - Find #p, n, e<sup>-</sup> in an atom of bromine-80

p-35  
 n-45  
 e<sup>-</sup>-35

} neutral charge

Questions - Quest. # 5 p.14

Answers.  
 p.39

↑  
 choose

## Periodic Table and Atomic Structure

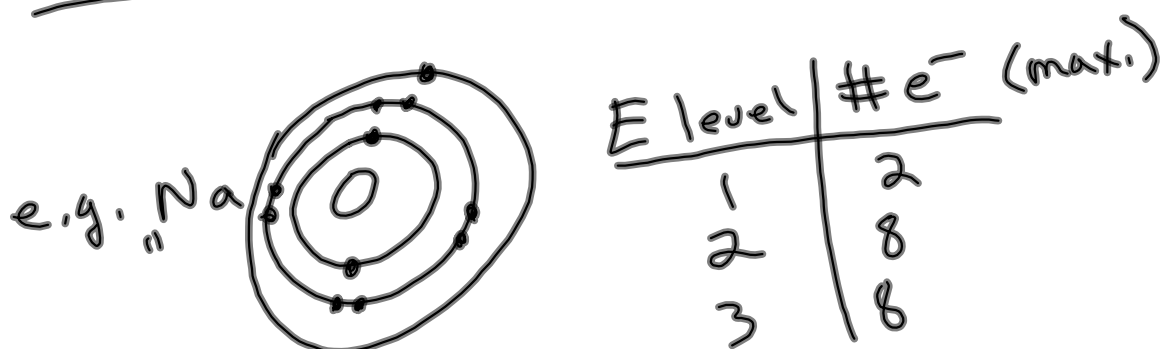
See p.15 text

Metals (left)

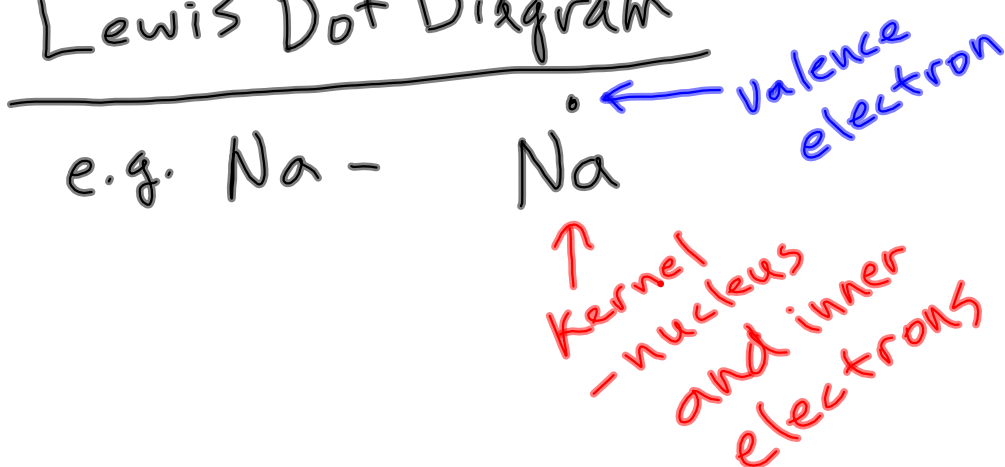
Non metals (right)

Metalloids (staircase line)

### Electrons in atoms - energy levels



### Lewis Dot Diagram



e.g. C



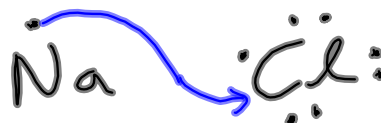
Read text - p.15-19

## Chemical Bonding

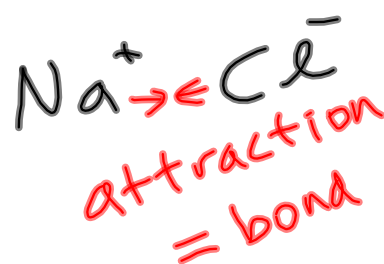
A. Ionic — conduct electricity  
 ↑ solution  
 charged "atom" — high melting pt.

e.g. NaCl — sodium chloride

↑ ↑  
 + —  
 charges



Octet rule — stable



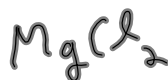
### Formulas and Names

Given a chemical name → write a formula

e.g. 1. Sodium chloride



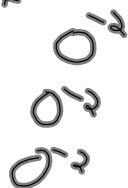
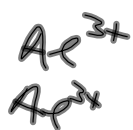
2. Magnesium chloride



3. Aluminum oxide



$$3+3=6 \quad (-2)+(-2)+(-2)=-6$$



Given a formula → write name

e.g.  $\text{K}_2\text{O}$



balanced charge.

potassium oxide

2.  $\text{Ca}^{2+} (\text{NO}_3^-)_2$  complex ion

+2      -2

Calcium nitrate

Questions - p.26 #13-16.  
17, 19