

Ionic Compounds

Unit 3 Pretest



Word/Term: Oxidation Number	Drawing:
Describe in own words:	
Textbook Definition:	
Rate my Understanding: 1 2 3 4	
How I remember it:	Reflections:

Oxidation Numbers

1A 1 H	2+ 2A 3 Li 4 Be	3+ 13A 5 B 14A 6 C 15A 7 N 16A 8 O 17A 9 F 18A 2 He	4 13A 5 B 14A 6 C 15A 7 N 16A 8 O 17A 9 F 18A 2 He	3- 13A 5 B 14A 6 C 15A 7 N 16A 8 O 17A 9 F 18A 2 He	2- 13A 5 B 14A 6 C 15A 7 N 16A 8 O 17A 9 F 18A 2 He	1- 13A 5 B 14A 6 C 15A 7 N 16A 8 O 17A 9 F 18A 2 He	0
11 Na 12 Mg	Transition Metals (Oxidation #s vary)	31 Ga 32 Ge 33 As 34 Se 35 Br 36 Kr	31 Ga 32 Ge 33 As 34 Se 35 Br 36 Kr	31 Ga 32 Ge 33 As 34 Se 35 Br 36 Kr	31 Ga 32 Ge 33 As 34 Se 35 Br 36 Kr	31 Ga 32 Ge 33 As 34 Se 35 Br 36 Kr	31 Ga 32 Ge 33 As 34 Se 35 Br 36 Kr

Divides metals and non-metals

The Octet Rule

- What is the magic number that all atoms are trying to get to?
 - What are the exceptions?

Oxidation Numbers

1A	2A	3A	4A	5A	6A	7A	8A	9A	10A	11A	12A
1	2	3	4	5	6	7	8	9	10	11	12
H	He	B	C	N	O	F	Ne	Na	Mg	Al	Si
Li	Be	13A	14A	15A	16A	17A	18A	19	20	21	22
Na	Mg	Al	Si	P	S	Cl	Ar	K	Ca	Sc	Ti
K	Ca	Transition Metals (Oxidation #s vary)				31	32	33	34	35	36
		Ga	Ge	As	Se	Br	Kr				

Divides metals and non-metals

Metals (Positive Ions) Positive because they *LOSE* electrons.

Non-metals (Negative Ions) Negative because they *GAIN* electrons.

Types of Ions

- **CATIONS**- When an atom loses an electron(s)
 - **CATIONS** are **POSITIVE**
 - Metals characteristically form **CATIONS**
- **ANION**- When an atom gains one or more electrons
 - **ANIONS** are **NEGATIVE**
 - Nonmetals characteristically form **ANIONS**

Oxidation Numbers

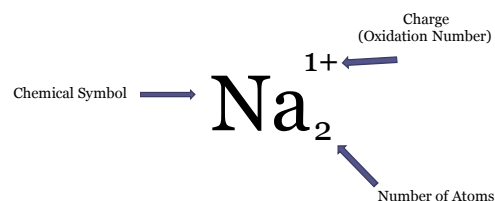
1A	2A	3A	4A	5A	6A	7A	8A	9A	10A	11A	12A
1	2	3	4	5	6	7	8	9	10	11	12
H	He	B	C	N	O	F	Ne	Na	Mg	Al	Si
Li	Be	13A	14A	15A	16A	17A	18A	19	20	21	22
Na	Mg	Al	Si	P	S	Cl	Ar	K	Ca	Sc	Ti
K	Ca	Transition Metals (Oxidation #s vary)				31	32	33	34	35	36
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Divides metals and non-metals

CATIONS ← Metals (Positive Ions) Positive because they *LOSE* electrons.

Non-metals (Negative Ions) Negative because they *GAIN* electrons. → **ANIONS**

Notation



Losers of Electrons become Positive (Cations)

Mg

Gainers of Electrons become Negative (Anions)

O

Subscripts

- Tell you the number of atoms in a molecule



No number means 1 Atom



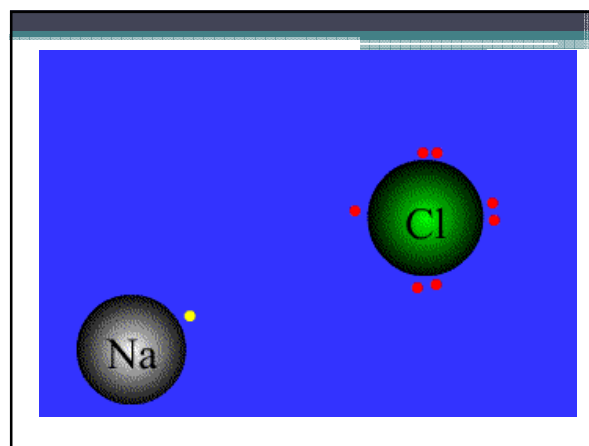
How many atoms are in each compound?

Word/Term: Chemical Bond	Drawing:
Describe in own words:	
Textbook Definition:	
Rate my Understanding: 1 2 3 4	
How I remember it:	Reflections:

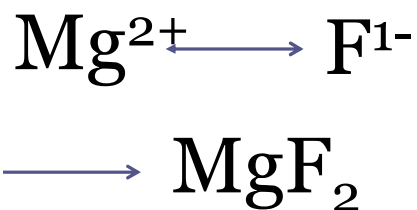
Word/Term: Ionic Bonds	Drawing:
Describe in own words:	
Textbook Definition:	
Rate my Understanding: 1 2 3 4	
How I remember it:	Reflections:

Opposites Attract

- Just as with protons and electrons
 - Oppositely charged atoms attract
- Cations** (metals) attract **Anions** (nonmetals) forming **Ionic Bonds**

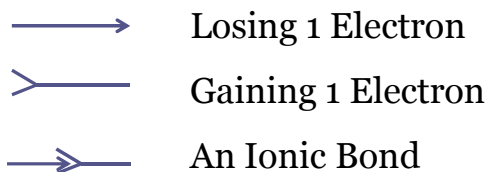


Positive Ions Attract Negative Ions



Electron Arrows

- Electron arrows are an easy way to visualize electrons being given or accepted by atoms



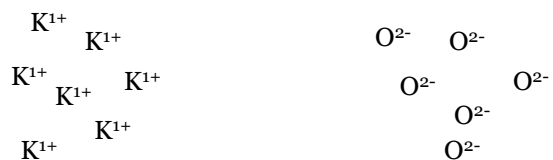
Building your Ionic Compounds

- The number of electron arrows comes from the oxidation number
- Positives give electrons
- Negative receive electrons



Elements Combining

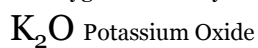
- When elements combine there are a lot of atoms of each element
- Each element will gain or lose electrons according to its oxidation number



How Atoms are Needed to Make the Compound



- Each oxygen will attract two potassiums, so potassium and oxygen will always combine as

Go to the Boards
Combine the following compounds

- Sodium and Oxygen
- Beryllium and Fluorine
- Magnesium and Sulfur
- Lithium and Phosphorus
- Calcium and Nitrogen
- Aluminum and Oxygen

Homework

- Complete Ionic Compounds Worksheet
- Next Class
 - Covalent Bonds