

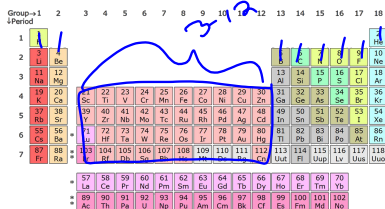
Review

What elements are the main group elements?

1, 2, 13-18

Where groups make up the transition metals?

3-12



Oct 7-10:58 AM

Main Group vs. Transition Elements

-- main group elements always have the same charge for their ions

ex: Mg^{+2} , F^{-}

-- transition metals can have multiple charges for their ions -- multivalent, variable state

ex: Cu^{+} , Cu^{+2}

↑ ↑

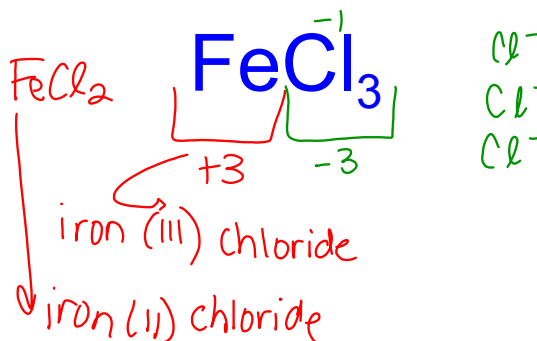
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Li +1	Be +2											B +3	C +4	N +5	O -2	F -1	Ne
Na +1	Mg +2											Al +3	Si +4	P +5	S +6	Cl -1	Ar
K +1	Ca +2	Sc +3	Ti +4	V +5	Cr +6	Mn +7	Fe +3	Co +3	Ni +2	Cu +2	Zn +2	Ga +3	Ge +4	As +5	Se +6	Br -1	Kr +2
Rb +1	Sr +2	Y +3	Zr +4	Nb +5	Mo +6	Tc +7	Ru +8	Rh +9	Pd +4	Ag +1	Cd +2	In +3	Sn +4	Sb +5	Te +6	I -1	Xe +4
Cs +1	Ba +2	Lu +3	Hf +4	Ta +5	W +6	Re +7	Os +8	Ir +9	Pt +4	Au +3	Hg +2	Tl +3	Pb +4	Bi +5	Po +2	At -1	Rn
Fr +1	Ra +2	Lr +3															

Common oxidation numbers

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Is this Fe^{+2} or Fe^{+3} ?



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Naming with Transition Metals

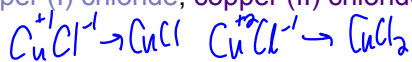
-- cation name stays the same

-- anion ending changes to --ide

-- use Roman Numerals to communicate the charge of the transition metal

charge cation charge for cation

ex: copper (I) chloride, copper (II) chloride



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Naming with Transition Metals

Steps to Name Ionic Compounds with Transition Metals:

1. Identify the charge of the anion
2. Determine the total charge from the anion (charge of the individual atom x how many you have)
3. Determine the total charge needed from the cation.
4. Divide the total charge by how many atoms you have.



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THINGS TO REMEMBER

- Zinc is **ALWAYS** a +2
- Silver is **ALWAYS** a +1
- You don't need to use roman numerals for these

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Practice:

$1 = I \quad 4 = IV$
 $2 = II \quad 5 = V$
 $3 = III \quad 6 = VI$
 $Ni^{+2} \quad S^{-2}$
 $+2 \quad -2 = 0$

Name the following compounds:

1. NiS nickel (II) sulfide VII
2. $CuCl_2$ copper (II) chloride VIII
3. Fe_3N_2 iron (II) nitride IX
4. PbS_2 lead (IV) sulfide X
 XI

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Writing the Formula with Transition Metals

-- use the charge from the Roman numeral for the cation charge

-- balance the charges so the compound is neutral

EX: cobalt (III) iodide

$Co^{+3} \quad I^{-1} \quad CoI_3$

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Practice:

$Cr^{+3} \quad S^{-2}$
 $Cr^{+3} \quad S^{-2} = 0$
 $+3 \quad -2 = 0$

Name the following compounds:

1. chromium (I) sulfide $Cr^{+1} S^{-2} = Cr_2S$
2. tin (IV) chloride $Sn^{+4} Cl^{-1} = SnCl_4$
3. titanium (II) phosphide $Ti^{+2} P^{-3} = Ti_3P_2$
4. iron (III) nitride $Fe^{+3} N^{-3} = FeN$

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