



Cycle 4 Chem I Lesson 2

Write formulas and names of binary ionic compounds

AGENDA

Get out HW for checking!

Warmup: Gaining and Losing Valence Electrons

Vocab: “Binary compound” = Compound of exactly TWO elements.

Classwork: Writing Formulas for Ionic Compounds



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Warmup: Gaining and Losing Valence Electrons

3 or less valence electrons:

LOSE to give EMPTY valence shell
form + ion

5 or more valence electrons:

GAIN to form OCTET
form - ion

Classwork



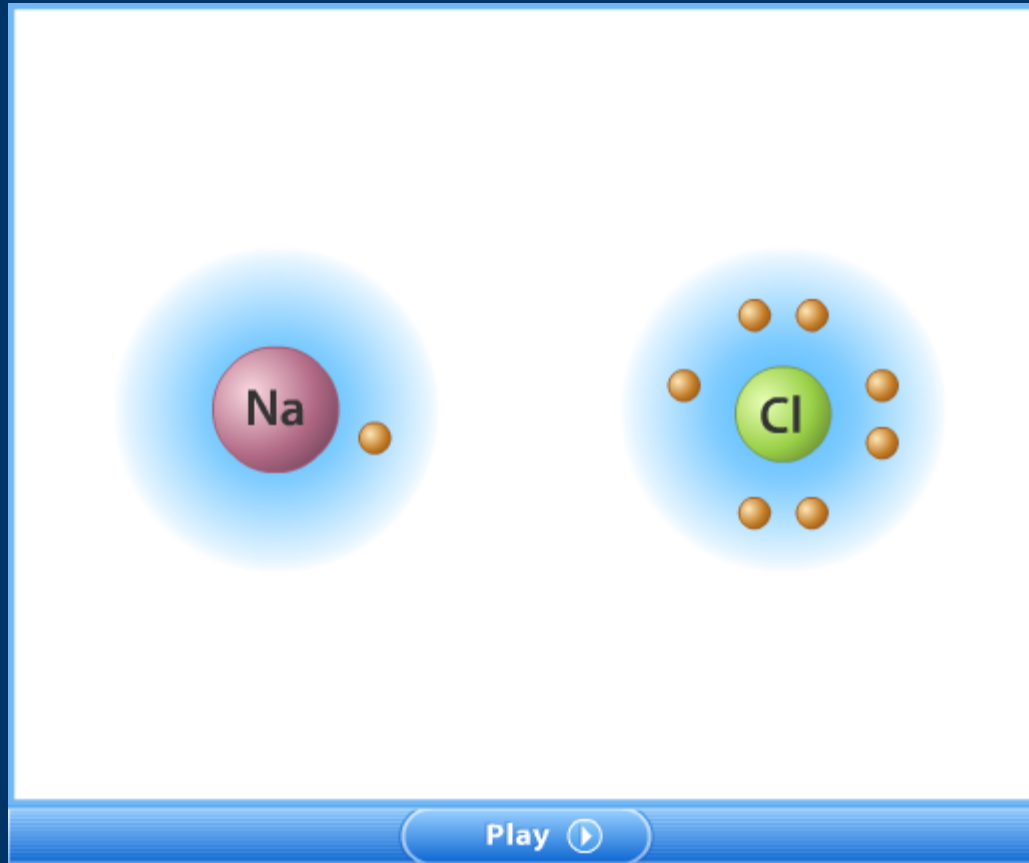
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Ionic Bonding



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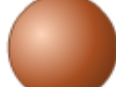


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Naming Monatomic Ions

 Fluorine F	 Fluoride anion F ⁻	 Sodium Na	 Sodium cation Na ⁺
 Chlorine Cl	 Chloride anion Cl ⁻	 Calcium Ca	 Calcium cation Ca ²⁺
 Iodine I	 Iodide anion I ⁻	 Iron Fe	 Iron(III) cation Fe ³⁺
 Bromine Br	 Bromide anion Br ⁻	 Copper Cu	 Copper(II) cation Cu ²⁺

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Naming Ionic Compounds, *continued* The Names of Ions Are Used to Name an Ionic Compound

- The name of a binary ionic compound is made up of just two words: the name of the cation followed by the name of the anion.

NaCl sodium chloride

CuCl₂ copper(II) chloride

ZnS zinc sulfide

Mg₃N₂ magnesium nitride

K₂O potassium oxide

Al₂S₃ aluminum sulfide





Writing Ionic Formulas

- Ionic compounds have a balance of positive and negative charges.
- Both ions in sodium chloride carry a single charge, so there are equal numbers of the ions Na^+ and Cl^- .
- The formula for sodium chloride is written as NaCl to show this one-to-one ratio.



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Writing Ionic Formulas, *continued* Compounds Must Have No Overall Charge

- Example: Magnesium Nitride
- In magnesium nitride, the Mg^{2+} ion, has two positive charges, and the N^{3-} ion, has three negative charges.
- The cations and anions must be combined in such a way that there are the same number of negative charges and positive charges.





Writing Ionic Formulas, *continued* Compounds Must Have No Overall Charge, *continued*

- Three Mg^{2+} cations are needed for every two N^{3-} anions for electroneutrality.
 - That way, there are six positive charges and six negative charges.
- Subscripts are used to denote ion ratios.
 - Therefore, the formula for magnesium nitride is Mg_3N_2 .



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