

Name:

Period:

Chemical Formulas of Ionic Compounds

What is a chemical formula?

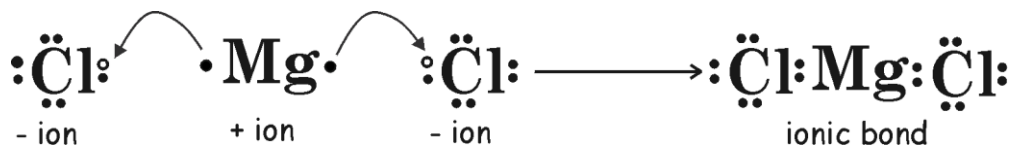
Chemical formulas have two important parts: chemical symbols for the elements in the compound and subscripts that tell how many atoms of each element are needed to form the compound. The chemical formula for water, H_2O , tells us that a water molecule is made of the elements hydrogen (H) and oxygen (O) and that it takes two atoms of hydrogen and one atom of oxygen to build the molecule.

How to write chemical formulas

Step 1: Determine the number of valence electrons for each atom from the periodic table.

Step 2: Draw the dot diagram for each atom using the number of valence electrons.

Step 3: Move electrons from one atom to another, adding extra atoms as needed, until all atoms have full (or empty) outer shells (see example below).



Step 4: Look at the dot diagrams and write the chemical formula.

Compound #1	# of valence electrons	Dot Diagram	Ion	Compound #2	# of valence electrons	Dot Diagram	Ion
Potassium (K)			Gain or lose	Calcium (Ca)			Gain or lose
			Cation or anion				Cation or anion
Chlorine (Cl)			Gain or lose	Chlorine (Cl)			Gain or lose
			Cation or anion				Cation or anion
Transfer of electrons			Chemical Formula	Transfer of electrons			Chemical Formula

Compound #3	# of valence electrons	Dot Diagram	Ion	Compound #4	# of valence electrons	Dot Diagram	Ion
Sodium (Na)			Gain or lose	Boron (B)			Gain or lose
			Cation or anion				Cation or anion
Oxygen (O)			Gain or lose	Phosphorus (P)			Gain or lose
			Cation or anion				Cation or anion
Transfer of Electrons			Chemical Formula	Transfer of Electrons			Chemical Formula
Compound	# of	Dot	Ion	Compound	# of	Dot	Ion

#5	valence electrons	Diagram		#6	valence electrons	Diagram	
Lithium (Li)			Gain or lose	Aluminum (Al)			Gain or lose
			Cation or anion				Cation or anion
Sulfur (S)			Gain or lose	Oxygen (O)			Gain or lose
			Cation or anion				Cation or anion
Transfer of Electrons			Chemical Formula	Transfer of Electrons			Chemical Formula

Compound #7	# of valence electrons	Dot Diagram	Ion	Compound #8	# of valence electrons	Dot Diagram	Ion
Beryllium (Be)			Gain or lose	Calcium (Ca)			Gain or lose
			Cation or anion				Cation or anion
Iodine (I)			Gain or lose	Nitrogen (N)			Gain or lose
			Cation or anion				Cation or anion
Transfer of Electrons			Chemical Formula	Transfer of Electrons			Chemical Formula

Compound #9	# of valence electrons	Dot Diagram	Ion	Compound #10	# of valence electrons	Dot Diagram	Ion
Sodium (Na)			Gain or lose	Magnesium (Mg)			Gain or lose
			Cation or anion				Cation or anion
Bromine (Br)			Gain or lose	Fluorine (F)			Gain or lose
			Cation or anion				Cation or anion
Transfer of Electrons			Chemical Formula	Transfer of Electrons			Chemical Formula