

Name: KEY Date: _____ Period: _____

Atoms vs. Ions worksheet

Cations:



metals

Have a positive charge

Have lost electrons

Anions:



nonmetals

Have a negative charge

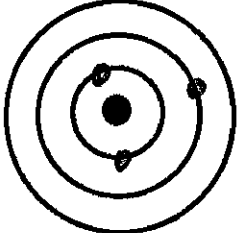
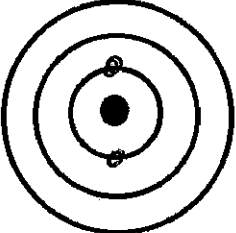
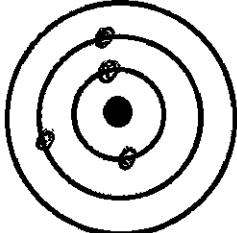
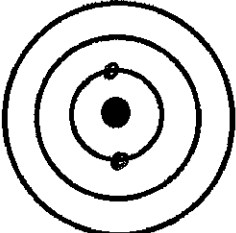
Have gained electrons

Both metals and nonmetals are trying to reach the octet "8" in their valence

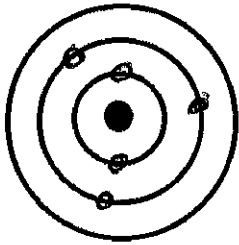
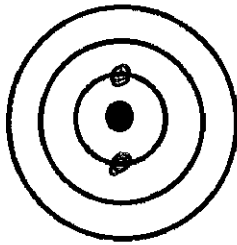
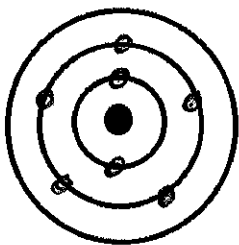
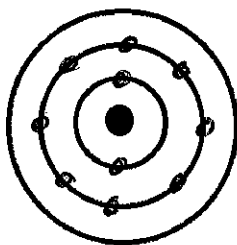
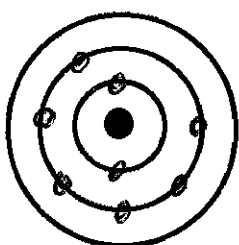
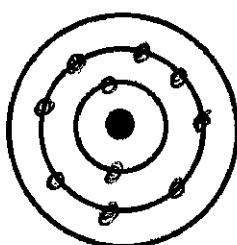
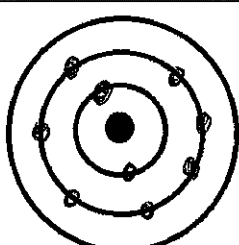
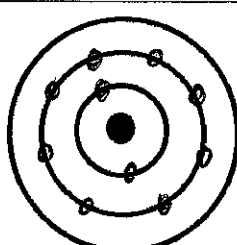
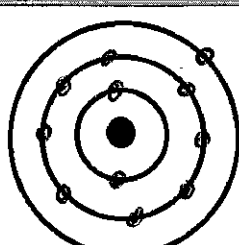
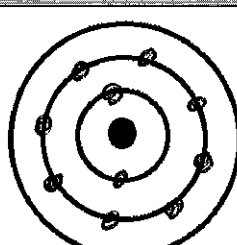
Ion symbol:

To write the ion symbol, you must write the element symbol with the charge written on the top right.

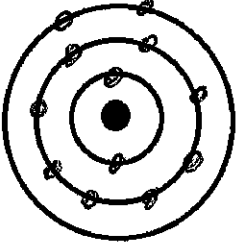
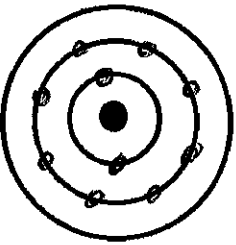
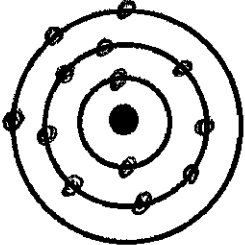
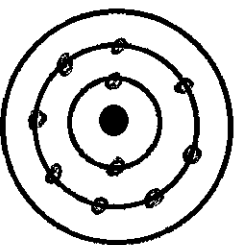
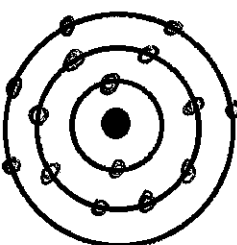
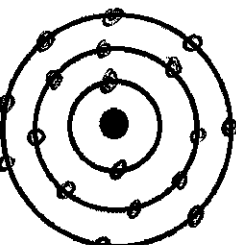
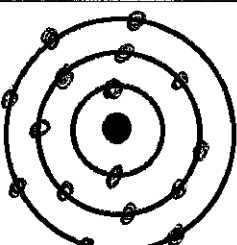
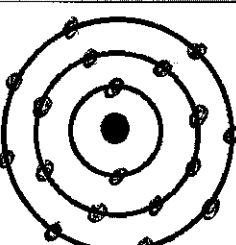
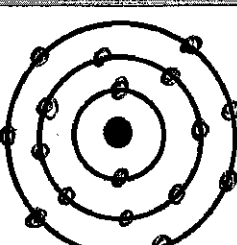
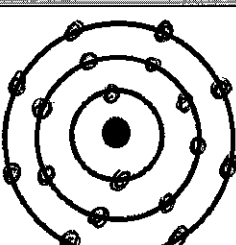
Example: Ca^{2+} , Zn^{2+} , Ag^{1+}

Lithium atom		Lithium ion		Lithium atom	Lithium ion
				Atomic number: 3	Atomic number: 3
				Mass number: 7	Mass number: 7
				Protons: 3	Protons: 3
				Neutrons: 4	Neutrons: 4
				Electrons: 3	Electrons: 2
Lithium atom		Lithium ion		Cation/Anion: lose 1e ⁻	Ion symbol: Li ⁺¹
Beryllium atom		Beryllium ion		Beryllium atom	Beryllium ion
				Atomic number: 4	Atomic number: 4
				Mass number: 9	Mass number: 9
				Protons: 4	Protons: 4
				Neutrons: 5	Neutrons: 5
				Electrons: 4	Electrons: 2
Beryllium atom		Beryllium ion		Cation/Anion: lose 2e ⁻	Ion symbol: Be ²⁺

Assignment 3 p2

		Boron atom	Boron ion	Boron atom	Boron ion
		Atomic number: 5	Atomic number: 5	Atomic number: 5	Atomic number: 5
		Mass number: 11	Mass number: 11	Mass number: 11	Mass number: 11
		Protons: 5	Protons: 5	Protons: 5	Protons: 5
		Neutrons: 6	Neutrons: 6	Neutrons: 6	Neutrons: 6
		Electrons: 5	Electrons: 2	Electrons: 5	Electrons: 2
		Cation/Anion: lose 3e ⁻	Ion symbol: B ³⁺		
		Nitrogen atom	Nitrogen ion	Nitrogen atom	Nitrogen ion
		Atomic number: 7	Atomic number: 7	Atomic number: 7	Atomic number: 7
		Mass number: 14	Mass number: 14	Mass number: 14	Mass number: 14
		Protons: 7	Protons: 7	Protons: 7	Protons: 7
		Neutrons: 7	Neutrons: 7	Neutrons: 7	Neutrons: 7
		Electrons: 7	Electrons: 10	Electrons: 7	Electrons: 10
		Cation/Anion: Gain 3e ⁻	Ion symbol: N ³⁻		
		Oxygen atom	Oxygen ion	Oxygen atom	Oxygen ion
		Atomic number: 8	Atomic number: 8	Atomic number: 8	Atomic number: 8
		Mass number: 16	Mass number: 16	Mass number: 16	Mass number: 16
		Protons: 8	Protons: 8	Protons: 8	Protons: 8
		Neutrons: 8	Neutrons: 8	Neutrons: 8	Neutrons: 8
		Electrons: 8	Electrons: 10	Electrons: 8	Electrons: 10
		Cation/Anion: Gain 2e ⁻	Ion symbol: O ²⁻		
		Fluorine atom	Fluorine ion	Fluorine atom	Fluorine ion
		Atomic number: 9	Atomic number: 9	Atomic number: 9	Atomic number: 9
		Mass number: 19	Mass number: 19	Mass number: 19	Mass number: 19
		Protons: 9	Protons: 9	Protons: 9	Protons: 9
		Neutrons: 10	Neutrons: 10	Neutrons: 10	Neutrons: 10
		Electrons: 9	Electrons: 10	Electrons: 9	Electrons: 10
		Cation/Anion: Gain 1e ⁻	Ion symbol: F ⁻		
		Sodium atom	Sodium ion	Sodium atom	Sodium ion
		Atomic number: 11	Atomic number: 11	Atomic number: 11	Atomic number: 11
		Mass number: 23	Mass number: 23	Mass number: 23	Mass number: 23
		Protons: 11	Protons: 11	Protons: 11	Protons: 11
		Neutrons: 12	Neutrons: 12	Neutrons: 12	Neutrons: 12
		Electrons: 11	Electrons: 10	Electrons: 11	Electrons: 10
		Cation/Anion: lose 1e ⁻	Ion symbol: Na ⁺		

Assignment 3 p 3

 		Magnesium atom	Magnesium ion	Magnesium atom	Magnesium ion
		Atomic number: 12	Atomic number: 12	Atomic number: 12	Atomic number: 12
		Mass number: 24	Mass number: 24	Mass number: 24	Mass number: 24
		Protons: 12	Protons: 12	Protons: 12	Protons: 12
		Neutrons: 12	Neutrons: 12	Neutrons: 12	Neutrons: 12
		Electrons: 12	Electrons: 10	Electrons: 12	Electrons: 10
		Cation/Anion: lose 2e ⁻	Ion symbol: Mg ²⁺		
 		Aluminum atom	Aluminum ion	Aluminum atom	Aluminum ion
		Atomic number: 13	Atomic number: 13	Atomic number: 13	Atomic number: 13
		Mass number: 27	Mass number: 27	Mass number: 27	Mass number: 27
		Protons: 13	Protons: 13	Protons: 13	Protons: 13
		Neutrons: 14	Neutrons: 14	Neutrons: 14	Neutrons: 14
		Electrons: 13	Electrons: 10	Electrons: 13	Electrons: 10
		Cation/Anion: lose 3e ⁻	Ion symbol: Al ³⁺		
 		Phosphorus atom	Phosphorus ion	Phosphorus atom	Phosphorus ion
		Atomic number: 15	Atomic number: 15	Atomic number: 15	Atomic number: 15
		Mass number: 31	Mass number: 31	Mass number: 31	Mass number: 31
		Protons: 15	Protons: 15	Protons: 15	Protons: 15
		Neutrons: 16	Neutrons: 16	Neutrons: 16	Neutrons: 16
		Electrons: 15	Electrons: 18	Electrons: 15	Electrons: 18
		Cation/Anion: Gain 3e ⁻	Ion symbol: P ³⁻		
 		Sulfur atom	Sulfur ion	Sulfur atom	Sulfur ion
		Atomic number: 16	Atomic number: 16	Atomic number: 16	Atomic number: 16
		Mass number: 32	Mass number: 32	Mass number: 32	Mass number: 32
		Protons: 16	Protons: 16	Protons: 16	Protons: 16
		Neutrons: 16	Neutrons: 16	Neutrons: 16	Neutrons: 16
		Electrons: 16	Electrons: 18	Electrons: 16	Electrons: 18
		Cation/Anion: Gain 2e ⁻	Ion symbol: S ²⁻		
 		Chlorine atom	Chlorine ion	Chlorine atom	Chlorine ion
		Atomic number: 17	Atomic number: 17	Atomic number: 17	Atomic number: 17
		Mass number: 35	Mass number: 35	Mass number: 35	Mass number: 35
		Protons: 17	Protons: 17	Protons: 17	Protons: 17
		Neutrons: 18	Neutrons: 18	Neutrons: 18	Neutrons: 18
		Electrons: 17	Electrons: 18	Electrons: 17	Electrons: 18
		Cation/Anion: Gains 1e ⁻	Ion symbol: Cl ¹⁻		