Name: _____ Date: _____ Period: _____

# Atoms vs. Ions worksheet

## Cations:

Have a positive charge

Have lost electrons

## Anions:

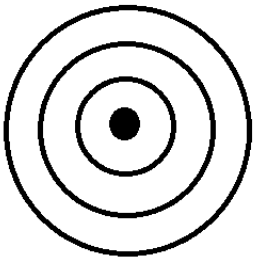
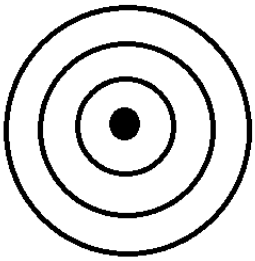
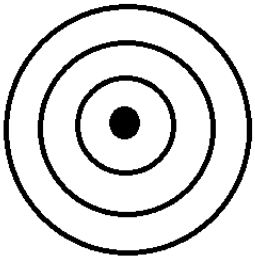
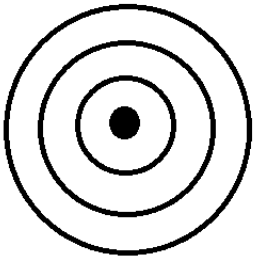
Have a negative charge

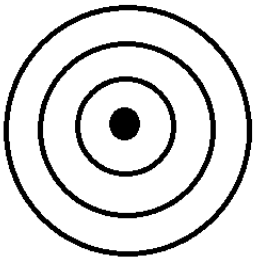
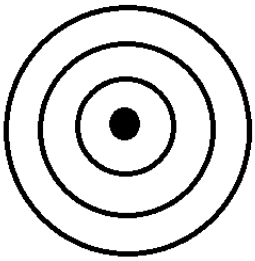
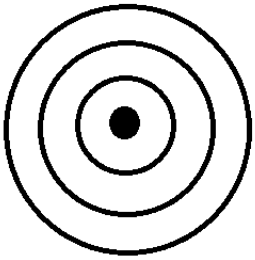
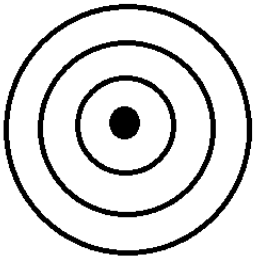
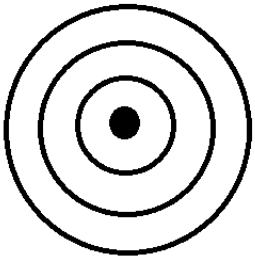
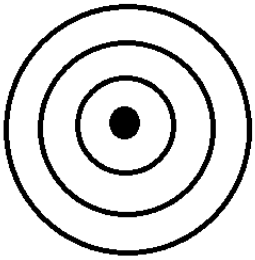
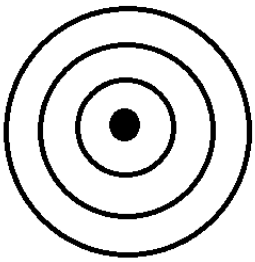
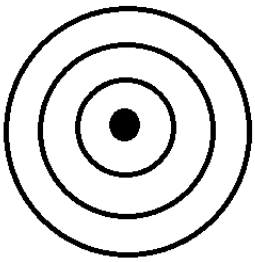
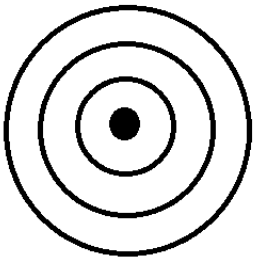
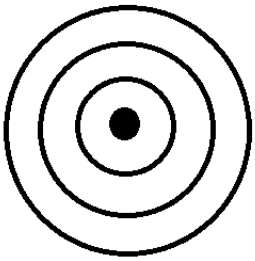
Have gained electrons

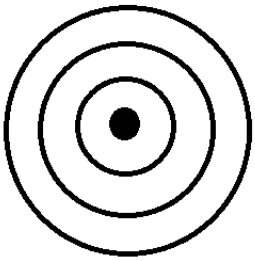
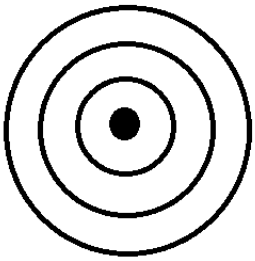
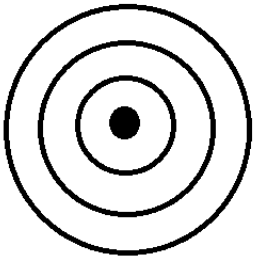
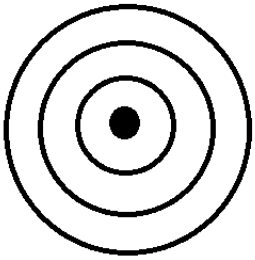
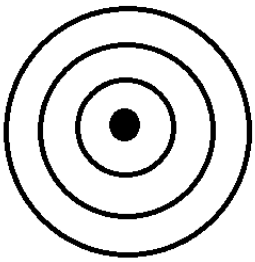
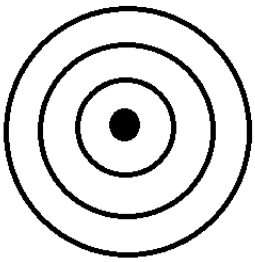
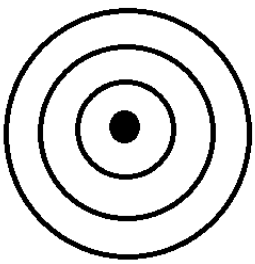
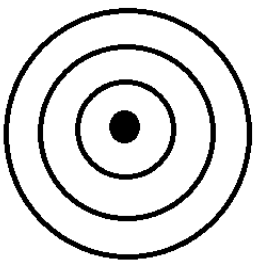
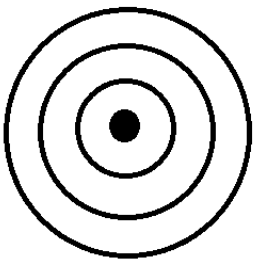
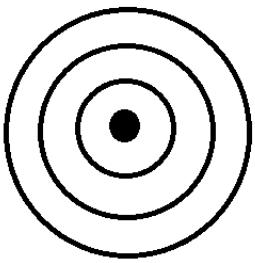
## Ion symbol:

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** |
| | | Atomic number: | Atomic number: |
| | | Mass number: | Mass number: |
| | | Protons: | Protons: |
| | | Neutrons: | Neutrons: |
| | | Electrons: | Electrons: |
| **Lithium atom** | **Lithium ion** | Cation/Anion: | Ion symbol: |
| | | | |
|  |  | **Beryllium atom** | **Beryllium ion** |
| | | Atomic number: | Atomic number: |
| | | Mass number: | Mass number: |
| | | Protons: | Protons: |
| | | Neutrons: | Neutrons: |
| | | Electrons: | Electrons: |
| **Beryllium atom** | **Beryllium ion** | Cation/Anion: | Ion symbol: |
| | | | |

| | | | |
|---|---|---|---|
|  |  | **Boron atom** | **Boron ion** |
| | | Atomic number: | Atomic number: |
| | | Mass number: | Mass number: |
| | | Protons: | Protons: |
| | | Neutrons: | Neutrons: |
| | | Electrons: | Electrons: |
| **Boron atom** | **Boron ion** | Cation/Anion: | Ion symbol: |
| | | | |
|  |  | **Nitrogen atom** | **Nitrogen ion** |
| | | Atomic number: | Atomic number: |
| | | Mass number: | Mass number: |
| | | Protons: | Protons: |
| | | Neutrons: | Neutrons: |
| | | Electrons: | Electrons: |
| **Nitrogen atom** | **Nitrogen ion** | Cation/Anion: | Ion symbol: |
| | | | |
|  |  | **Oxygen atom** | **Oxygen ion** |
| | | Atomic number: | Atomic number: |
| | | Mass number: | Mass number: |
| | | Protons: | Protons: |
| | | Neutrons: | Neutrons: |
| | | Electrons: | Electrons: |
| **Oxygen atom** | **Oxygen ion** | Cation/Anion: | Ion symbol: |
| | | | |
|  |  | **Fluorine atom** | **Fluorine ion** |
| | | Atomic number: | Atomic number: |
| | | Mass number: | Mass number: |
| | | Protons: | Protons: |
| | | Neutrons: | Neutrons: |
| | | Electrons: | Electrons: |
| **Fluorine atom** | **Fluorine ion** | Cation/Anion: | Ion symbol: |
| | | | |
|  |  | **Sodium atom** | **Sodium ion** |
| | | Atomic number: | Atomic number: |
| | | Mass number: | Mass number: |
| | | Protons: | Protons: |
| | | Neutrons: | Neutrons: |
| | | Electrons: | Electrons: |
| **Sodium atom** | **Sodium ion** | Cation/Anion: | Ion symbol: |

| | | | |
|---|---|---|---|
|  |  | **Magnesium atom** | **Magnesium ion** |
| | | Atomic number: | Atomic number: |
| | | Mass number: | Mass number: |
| | | Protons: | Protons: |
| | | Neutrons: | Neutrons: |
| | | Electrons: | Electrons: |
| **Magnesium atom** | **Magnesium ion** | Cation/Anion: | Ion symbol: |
| | | | |
|  |  | **Aluminum atom** | **Aluminum ion** |
| | | Atomic number: | Atomic number: |
| | | Mass number: | Mass number: |
| | | Protons: | Protons: |
| | | Neutrons: | Neutrons: |
| | | Electrons: | Electrons: |
| **Aluminum atom** | **Aluminum ion** | Cation/Anion: | Ion symbol: |
| | | | |
|  |  | **Phosphorus atom** | **Phosphorus ion** |
| | | Atomic number: | Atomic number: |
| | | Mass number: | Mass number: |
| | | Protons: | Protons: |
| | | Neutrons: | Neutrons: |
| | | Electrons: | Electrons: |
| **Phosphorus atom** | **Phosphorus ion** | Cation/Anion: | Ion symbol: |
| | | | |
|  |  | **Sulfur atom** | **Sulfur ion** |
| | | Atomic number: | Atomic number: |
| | | Mass number: | Mass number: |
| | | Protons: | Protons: |
| | | Neutrons: | Neutrons: |
| | | Electrons: | Electrons: |
| **Sulfur atom** | **Sulfur ion** | Cation/Anion: | Ion symbol: |
| | | | |
|  |  | **Chlorine atom** | **Chlorine ion** |
| | | Atomic number: | Atomic number: |
| | | Mass number: | Mass number: |
| | | Protons: | Protons: |
| | | Neutrons: | Neutrons: |
| | | Electrons: | Electrons: |
| **Chlorine atom** | **Chlorine ion** | Cation/Anion: | Ion symbol: |

# Atoms and Ions Worksheet

Fill in the missing spaces in the charts below.

| Element | Symbol | Atomic Number | Mass Number | Protons | Neutrons | Electrons |
|---|---|---|---|---|---|---|
| Carbon | | 6 | 14 | | | |
| | O | 8 | | | 10 | |
| Potassium | | | | 19 | 20 | |
| | | 19 | 41 | | | |
| Tin | Sn | 50 | | | 68 | |
| Zinc | | | 64 | 30 | | |
| | | | 66 | | | 30 |
| | | | 68 | 30 | | |
| Cobalt | Co | 27 | | | 32 | |
| Boron | | | | 5 | 6 | |
| | | | 10 | | | 5 |
| | | 26 | | | 28 | |

| Ion | Symbol | Atomic Number | Mass Number | Protons | Neutrons | Electrons |
|---|---|---|---|---|---|---|
| Iodine | $I^{-1}$ | | 127 | 53 | | 54 |
| | $Cl^{-1}$ | | 35 | 17 | | |
| Hydrogen | | | 1 | 1 | | 0 |
| | $Br^{-1}$ | 35 | | | 46 | |
| | | 35 | 79 | | | 36 |
| | $B^{+3}$ | 5 | 11 | | | |
| Oxygen | $O^{-2}$ | | 16 | 8 | | |
| Nitrogen | | | | 7 | 7 | 10 |
| Aluminum | $Al^{+3}$ | | 27 | | | 10 |
| | $Fe^{+2}$ | | 56 | 26 | | 24 |
| | | | 63 | 29 | | 27 |