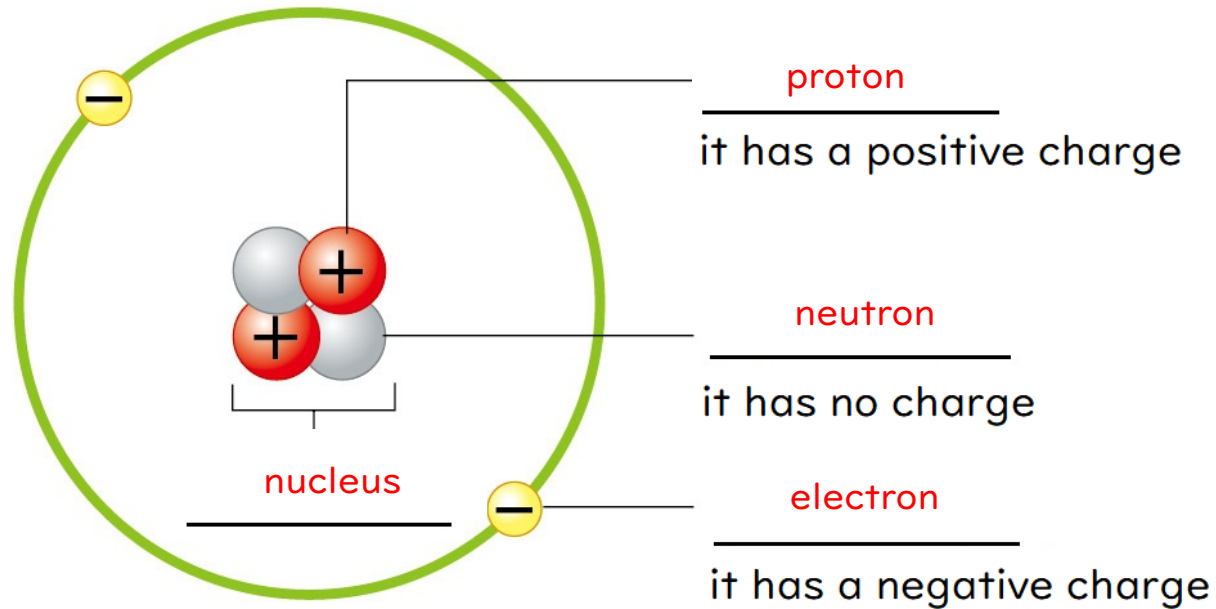


1-3 Ion

Structure of an Atom (Helium)



The charge of a proton is equal and opposite to that of an electron.

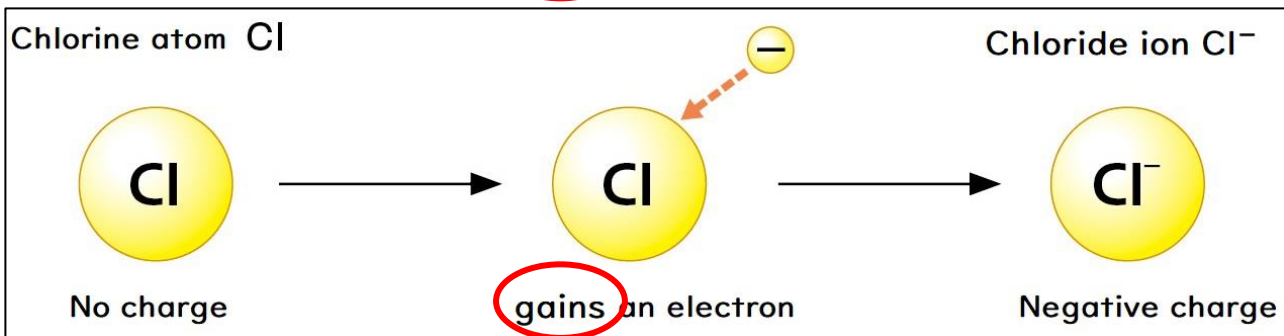
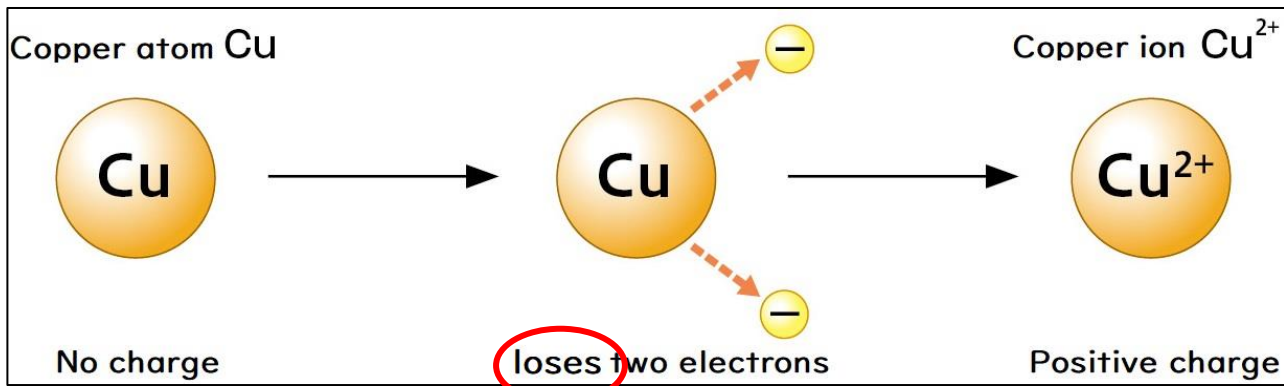
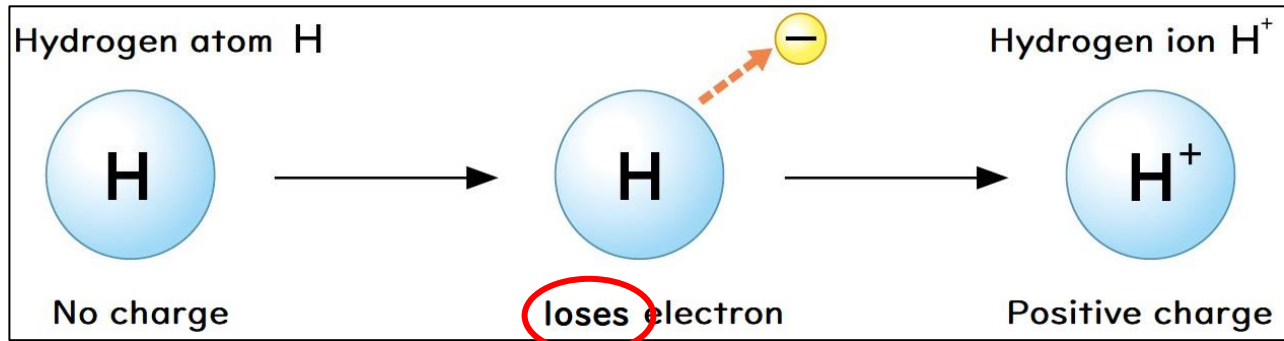


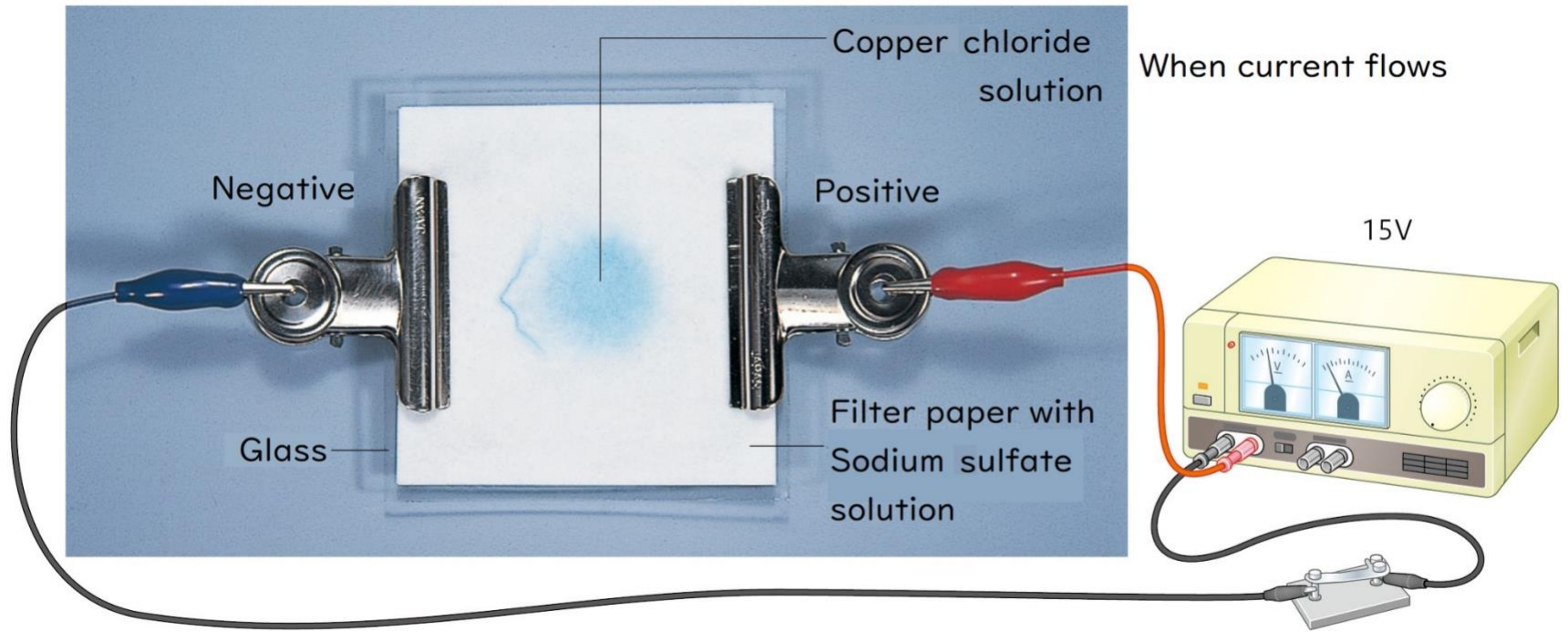
Usually, the number of protons is equal to electrons. As a whole, an atom has no charge.

Check!

An Atom : The number of protons is equal to electrons. No charge.

An Ion : An atom that have gained or lost electrons. Positive or Negative charge.





The blue spot moves to Negative side, because this blue spot causes Copper ions. Copper ion is positive charged (Cu^{2+}), so the blue spot attracts to Negative electrode.

Ion formula

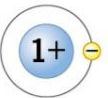
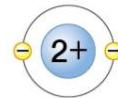
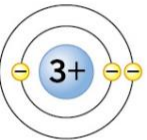
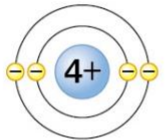
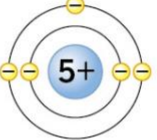
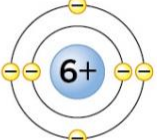
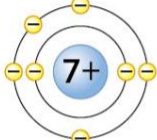
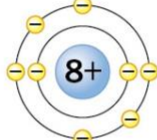
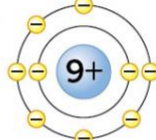
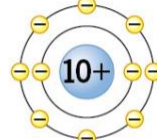
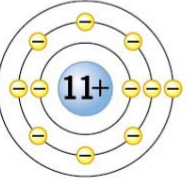
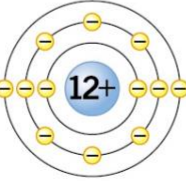
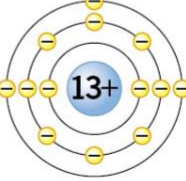
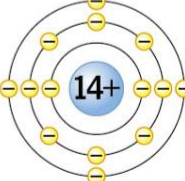
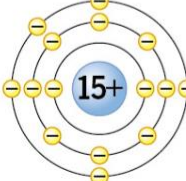
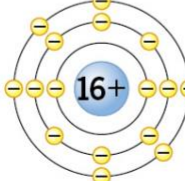
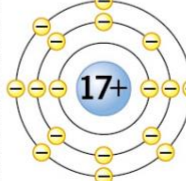
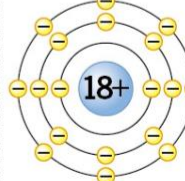
| 1 価の陽イオン | 1 ⁺ ions | formula |
|-----------|---------------------|------------------------------|
| 水素イオン | Hydrogen ion | H ⁺ |
| ナトリウムイオン | Sodium ion | Na ⁺ |
| カリウムイオン | Potassium ion | K ⁺ |
| アンモニウムイオン | Ammonium ion | NH ₄ ⁺ |

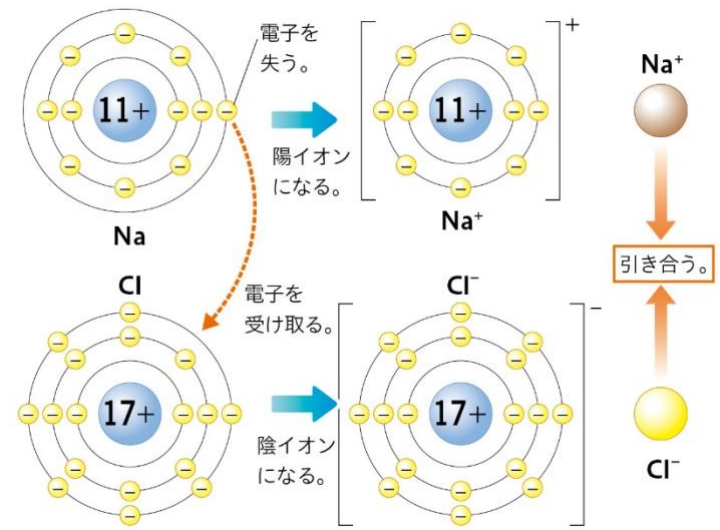
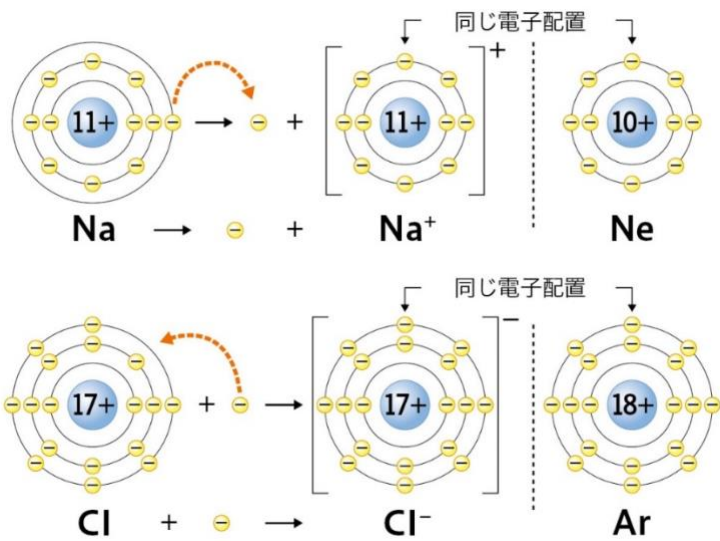
| 2 価の陽イオン | 2 ⁺ ions | formula |
|-----------|---------------------|------------------|
| 銅イオン | Copper ion | Cu ²⁺ |
| 亜鉛イオン | Zinc ion | Zn ²⁺ |
| マグネシウムイオン | Magnesium ion | Mg ²⁺ |
| カルシウムイオン | Calcium ion | Ca ²⁺ |

| 1価の陰イオン | 1^- ions | formula |
|---------|---------------|-------------|
| 塩化物イオン | Chloride ion | Cl^- |
| 水酸化物イオン | Hydroxide ion | OH^- |
| 硝酸イオン | Nitrate ion | NO_3^- |
| 酢酸イオン | Acetic ion | CH_3COO^- |

| 2 価の陰イオン | 2^- ion | formula |
|----------|---------------|-------------|
| 酸化物イオン | Oxide ion | O^{2-} |
| 硫化物イオン | Sulfide ion | S^{2-} |
| 炭酸イオン | Carbonate ion | CO_3^{2-} |
| 硫酸イオン | Sulfate ion | SO_4^{2-} |

電子配置 Atom structure

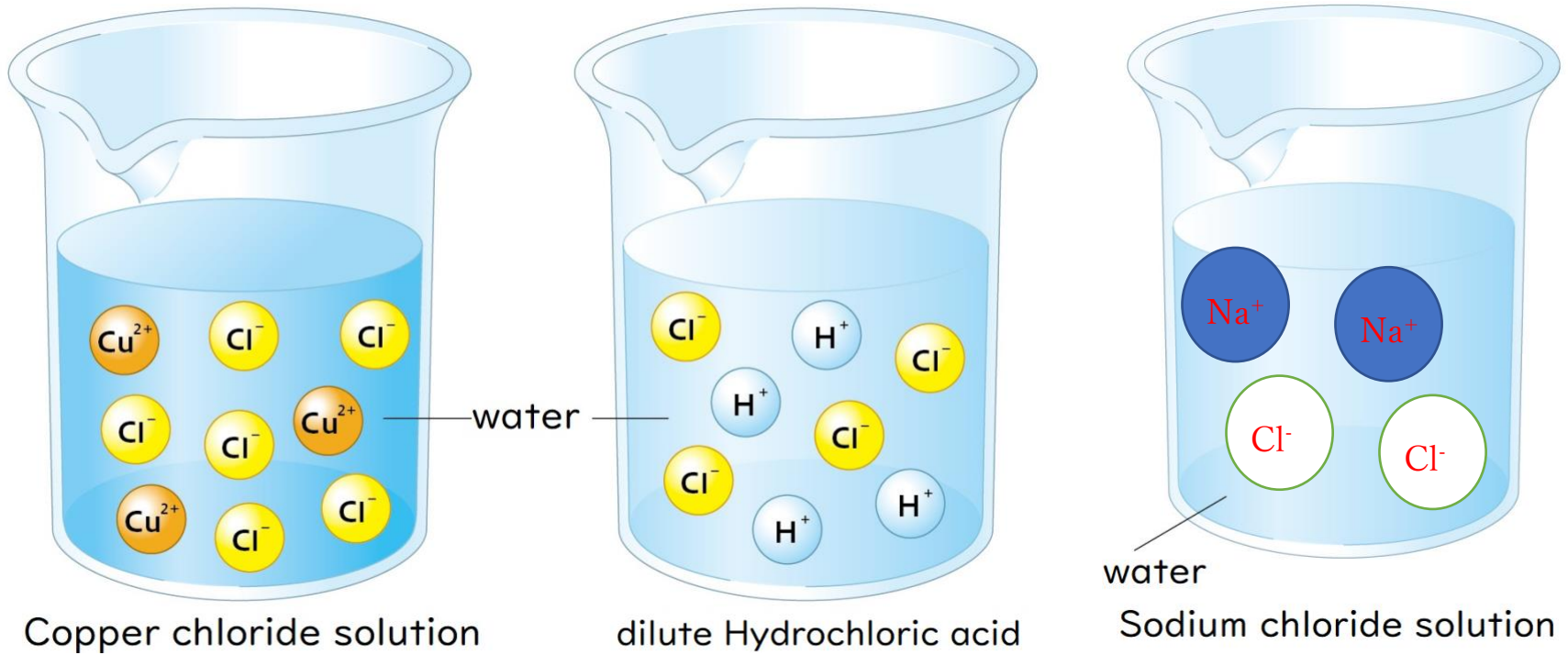
| | | | | | | | |
|---|--|--|---|--|---|--|--|
|  <p>水素 1H</p> | | | | | | |  <p>ヘリウム 2He</p> |
|  <p>リチウム 3Li</p> |  <p>ベリリウム 4Be</p> |  <p>ホウ素 5B</p> |  <p>炭素 6C</p> |  <p>ちっそ 窒素 7N</p> |  <p>酸素 8O</p> |  <p>フッ素 9F</p> |  <p>ネオン 10Ne</p> |
|  <p>ナトリウム 11Na</p> |  <p>マグネシウム 12Mg</p> |  <p>アルミニウム 13Al</p> |  <p>ケイ素 14Si</p> |  <p>リン 15P</p> |  <p>いおう 硫黄 16S</p> |  <p>塩素 17Cl</p> |  <p>アルゴン 18Ar</p> |



Ions and Electrolytes

Electrolyte

Separating electrolyte into positive and negative ion when electrolyte dissolve in water.



| 物質 | Material | Formula |
|----------|-------------------|---|
| 塩化銅 | Copper chloride | $\text{CuCl}_2 \rightarrow \text{Cu}^{2+} + 2\text{Cl}^-$ |
| 塩酸 | hydrochloric acid | $\text{HCl} \rightarrow \text{H}^+ + \text{Cl}^-$ |
| 水酸化ナトリウム | Sodium Hydroxide | $\text{NaOH} \rightarrow \text{Na}^+ + \text{OH}^-$ |
| 硫酸銅 | Copper sulfate | $\text{CuSO}_4 \rightarrow \text{Cu}^{2+} + \text{SO}_4^{2-}$ |