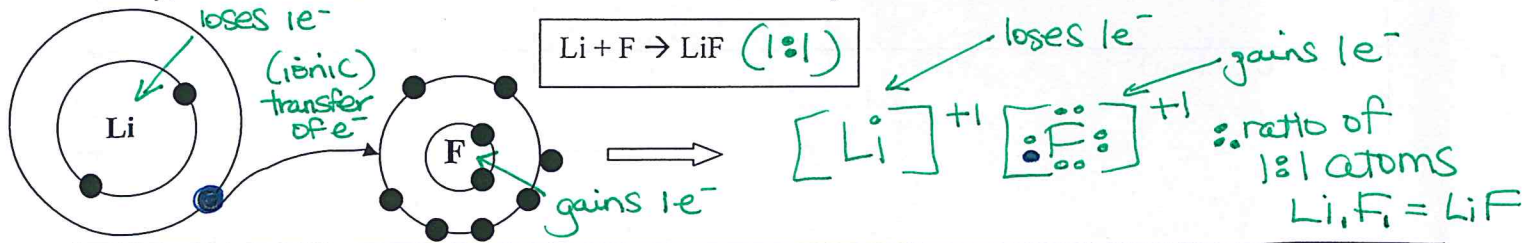


Ionic Bonding Worksheet

For each pair of elements below draw an atomic diagram showing electrons in different energy levels. Draw arrows to show where the outer electrons will go during a chemical reaction, then draw the resulting compound. Finally, fill in the table below each reaction. Refer to the sample shown.



| Atoms | Valence electrons | Electron transfer from/to each atom | Ions formed in the product |
|-------|-------------------|-------------------------------------|----------------------------|
| Li | 1ve | transfers 1ve ⁻ to F. | Li^+ |
| F | 7ve | accepts 1ve ⁻ from Li | F^- |

| Reactions | Atoms | Valence electrons | Electron transfer from/to each atom | Ions formed in the product |
|--|-------|-------------------|-------------------------------------|----------------------------|
| 1) $\text{Li} + \text{Cl} \Rightarrow \text{LiCl}$ | Li | 1ve | donate $1e^-$ | Li^+ |
| | Cl | 1ve | accepts $1e^-$ | Cl^- |
| 2) $\text{Ca} + \text{O} \Rightarrow \text{CaO}$ | Ca | 2ve | donates $2e^-$ | Ca^{+2} |
| | O | 6ve | accepts $2e^-$ | O^{-2} |
| 3) $\text{Be} + \text{F} \Rightarrow \text{BeF}_2$ | Be | 2ve | donates $2e^-$ to each F. | Be^{+2} |
| | F | 7ve | each F accepts 1ve each | F^- |
| 4) $\text{Mg} + \text{S} \Rightarrow \text{MgS}$ | Mg | 2ve | donates $2e^-$ to S | Mg^{+2} |
| | S | 6ve | accepts $2e^-$ | S^{-2} |
| 5) $\text{K} + \text{F} \Rightarrow \text{KF}$ | K | 1ve | donates $1e^-$ | K^+ |
| | F | 7ve | accepts $1e^-$ | F^- |

Solutions (continued)

| Reactions | Atoms | Valence electrons | Electron transfer from/to each atom | Ions formed in the product |
|--|-------|-------------------|--------------------------------------|----------------------------|
| 6) $\text{Al} + \text{Cl} \Rightarrow \text{AlCl}_3$ | Al | 3ve ⁻ | donates 3 e ⁻ to each Cl. | Al ⁺³ |
| | Cl | 1ve ⁻ | accepts 1ve ⁻ | Cl ⁻¹ |
| 7) $\text{Na} + \text{O} \Rightarrow \text{Na}_2\text{O}$ | Na | 1ve ⁻ | each Na donates 1ve ⁻ | Na ⁺¹ |
| | O | 2ve ⁻ | accepts 2ve ⁻ | O ⁻² |
| 8) $\text{Li} + \text{N} \Rightarrow \text{Li}_3\text{N}$ | Li | 1ve ⁻ | each Li donates 1ve ⁻ | Li ⁺¹ |
| | N | 3ve ⁻ | accepts 3ve ⁻ | N ⁻³ |
| 9) $\text{Mg} + \text{F} \Rightarrow \text{MgF}_2$ | Mg | 2ve ⁻ | donates 2ve ⁻ | Mg ⁺² |
| | F | 7ve ⁻ | each F accepts 1ve ⁻ | F ⁻¹ |
| 10) $\text{Na} + \text{F} \Rightarrow \text{NaF}$ | Na | 1ve ⁻ | donates 1ve ⁻ | Na ⁺ |
| | F | 7ve ⁻ | accepts 1ve ⁻ | F ⁻ |
| 11) $\text{Al} + \text{O} \Rightarrow \text{Al}_2\text{O}_3$ | Al | 3ve ⁻ | each Al donates 3ve ⁻ | Al ⁺³ |
| | O | 6ve ⁻ | each O accepts 2ve ⁻ | O ⁻² |
| 12) $\text{Li} + \text{O} \Rightarrow \text{Li}_2\text{O}$ | Li | 1ve ⁻ | donates 1e ⁻ (each Li) | Li ⁺ |
| | O | 2ve ⁻ | accepts 2ve ⁻ | O ⁻² |
| 13) $\text{K} + \text{S} \Rightarrow \text{K}_2\text{S}$ | K | 1ve ⁻ | each K donates 1ve ⁻ | K ⁺ |
| | S | 2ve ⁻ | accepts 2ve ⁻ | S ⁻² |
| 14) $\text{Mg} + \text{O} \Rightarrow \text{MgO}$ | Mg | 2ve ⁻ | donates 2ve ⁻ | Mg ⁺² |
| | O | 6ve ⁻ | accepts 2ve ⁻ | O ⁻² |