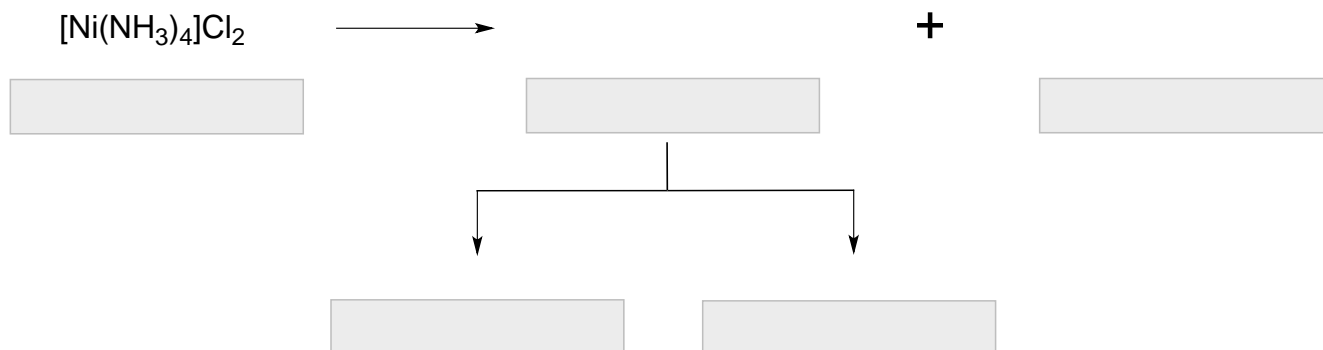


## CONCEPT: COORDINATION COMPLEXES

- The most prevalent feature of transition metal chemistry is the formation of coordination complexes or compounds.
  - These structures are composed of a *complex ion* that is connected to anions or molecules called \_\_\_\_\_.
  - In order to maintain the overall neutrality of the compound a \_\_\_\_\_ is used.



### Coordination Numbers

- The coordination number is the number of ligands bonded to the central metal cation.
  - The most common coordination numbers are \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.

**EXAMPLE:** Correctly label all the components of the coordination complex:  $\text{Na}_2[\text{SnCl}_6]$ .

**EXAMPLE:** Determine the number of ligands in the complex ion:  $[\text{Cr}(\text{H}_2\text{O})_4\text{Br}_2]\text{F}$ .

### Molecular Geometry of Coordination Complexes

- Coordination complexes form predictable geometries based on their coordination and their electron configuration.

Coordination Number	Configuration	Geometry	Example
2			
4			
4			
6			

- Coordination of 4: A \_\_\_\_\_ electron configuration forms tetrahedral complexes. \_\_\_\_\_ forms square planar complexes.

**CONCEPT: COORDINATION COMPLEXES**

**EXAMPLE:** Determine the geometry for the following complex ion:  $[\text{Cr}(\text{NH}_3)_4\text{Cl}_2]^+$ .

**PRACTICE:** Determine the geometry for the following complex molecule:  $\text{Pd}(\text{H}_2\text{O})_4$ .