Answer on Question 76127 in General Chemistry.

Use the half- reaction method to balance equation

- 1. Ca(s) + Cl2(g) arrow CaCl2(s)
- 2. CuCl2(aq) + Al(s) arrow AlCl3(aq) + Cu(s)
- 3. Cr3+(aq) + Zn(s) arrow Cr(s) + Zn2+(aq)

Solution:

1. $\mathrm{C}a^0$ -2e= $\mathrm{C}a^{2+}$ the reducing agent is oxidized $\mathrm{C}l_2+$ 2e= $\mathrm{2C}l^-$ the oxidant is reduced

$$Ca(s) + Cl_2 = CaCl_2$$

2. $Cu^{2+} + 2 = Cu^{0}$ the oxidant is reduced Al^{0} -3e= Al^{3+} the reducing agent is oxidized

Equalize the number of transmitted and received electrons Put 3 before ${\rm CuC}l_2$ and ${\rm Cu}$ Put 2 before Al and ${\rm AlC}l_3$ The equation is ${\rm 3CuC}l_2$ +2Al=2AlC l_3 +3Cu

3. Cr^{3+} +3e= Cr^{0} the oxidant is reduced

 Zn^0 -2e= Zn^{2+} the reducing agent is oxidized

Equalize the number of transmitted and received electrons

Put 2 before Cr^{3+} and Cr(s)

Put 3 before Zn and Zn^{2+}

The equation is $2Cr^{3+}(aq)+3Zn(s)=2Cr(s)+3Zn^{2+}$

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