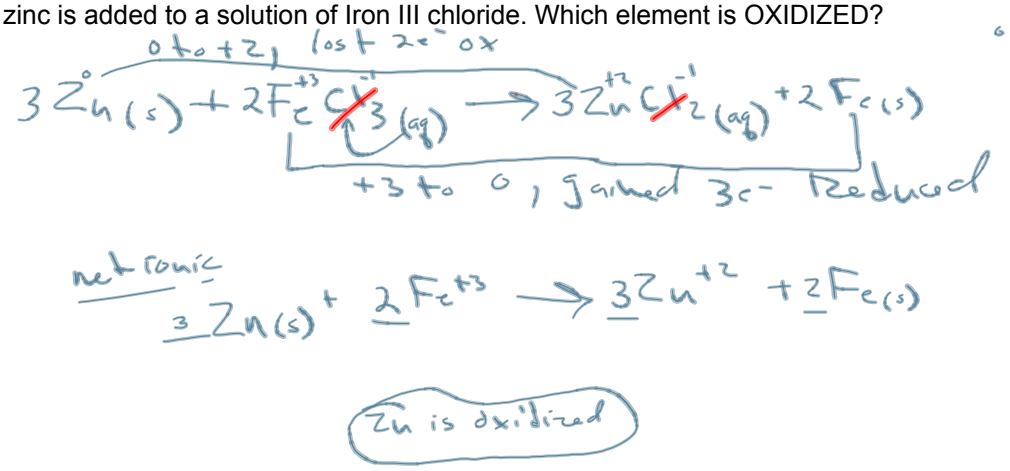
For each of the following reactions, write a balanced equation for the reaction and answer the question about the reaction. Coefficients sh
be in terms of lowest whole numbers. Assume that solutions are aqueous unless otherwise indicated. Represent substances in solutions
if the substances are extensively ionized. Omit formulas for any ions or molecules that are unchanged by the reaction.

Solid zinc is added to a solution of Iron III chloride. Which element is OXIDIZED?



A solution of sodium hydroxide is added to a solution of Lead (II) Nitrate. If one mole of each reactant were add
how many moles of precipitate would be recovered from the solution?

$$2\,NaOH_{(aq)} + 1\,Pb(NO_3)_{2(aq)} \rightarrow 2\,NaNO_{3(aq)} + 1\,Pb(OH)_{2(s)}$$

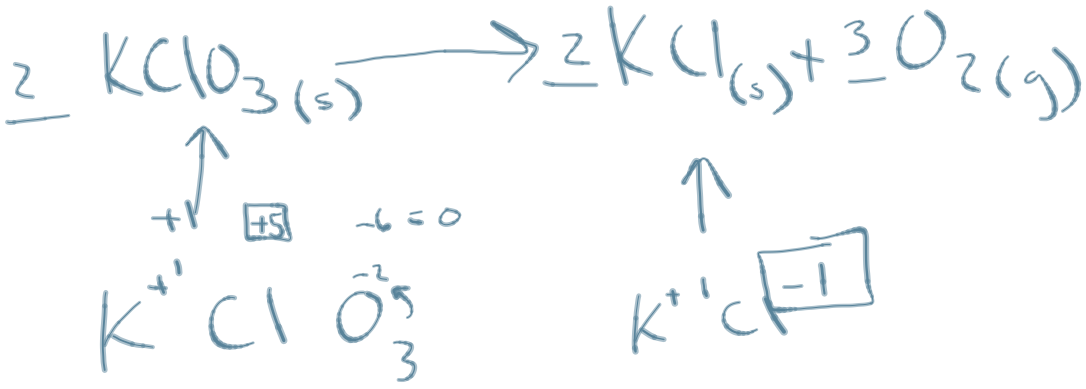
net ionic

$$2Na^{+} + 2OH^{-} + Pb^{+2} + 2NO_3^{-} \rightarrow 2Na^{+} + 2NO_3^{-} + Pb(OH)_{2(s)}$$

$$2\,OH^{-} + Pb^{+2} \rightarrow Pb(OH)_{2(s)}$$

This question can be tricky, but is not intended to be. To produce 1 mole of $Pb(OH)_{2(s)}$ you need 2 moles NaOH & 1 mole $Pb(NO_3)_2$. The proble states you have equal moles, so the total moles of $Pb(OH)_2$ produced would be 1/2, or .5 moles.

Potassium chlorate is heated in a test tube producing potassium chloride and oxygen. What was the oxidation number on the chlorine atom before AND after the reaction?



Cl before is +5 oxidation number.

Cl after is −1 oxidation number.

Aqueous hydrochloric acid is added solid sodium sulfide. What is/are the spectator ion/s?