Warm-Up:

Notes quiz:

1. ✓

Chapter 15 Continued:

Term	Definition	Key word to remember
Equilibrium constant	Concentrations of the reactants + products no longer change.	Constant
Le chateliers principle	If any system at equilibrium is disturbed by a change the equilibrium shifts.	Shift.
Solubility product constant Ksp.	The equilibrium expression for a chem. react that represents the dissolving of an ionic compound.	dissolving.

1. Addition of a reactant or product will make the reaction do what?

   a. Shift towards the removal, away form from the addition

2. Illustrate Le Chatelier's Principle:

250 kJ is evolved
when A + B react

$$A + 2B \rightleftharpoons C + D$$
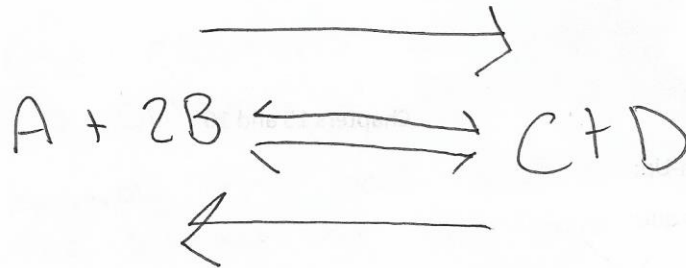
250 kJ is absorbed when
C + D react

3. Describe the following solubility based on the properties:
   a. Larger Ksp= Very soluble.

   b. Smaller Ksp= less soluble.

Chapter 16:

Term	Definition	Key word/ way to remember the term
Oxidation	Loss of electrons.	OIL RIG Oxidation is loss; reduction is gain.
Reduction	gain of electrons	LEO the Lions Says GER. Lose electrons Oxidation, Gain elect. reduction.
Reducing agent		

	Provides electrons - being Oxidized	~~being~~ Oxidized
Oxidizing agent	Accepts electrons - is being reduced	reduction.
Oxidation numbers/ states	used to identify the atoms that lose or gain electrons.	Identify.

1. Rules for assigning Oxidation Numbers:
   a. An atom in the elemental state has an Oxidation number of zero Ø.

   b. The Oxidation number for a monatomic ion is equal to it's ionic Charge.

c. The Sum of the Oxidation # of atoms in a compound is equal to zero.

> Sum of oxidation # of atoms in a Poly. ion is = to the charge of the ion.

d. More electronegitive element in a compound is assigned an Oxidation # equal to charge it would have if it were an ion.

2. State the oxidation numbers for the following elements:
   a. Group 1A= $+1$

   b. Group 2A= $+2$

   c. Group 7A= usually $+1$

   d. Hydrogen= -1 Always.

   e. Fluorine= -2 · usually.

   f. Oxygen= usually -1, but can be adjusted if needed

3. Assign an oxidation number to each element:
   a. Zn $\quad \cancel{0}$

   b. Cu2+ $\quad +2$

   c. CaCl2 $\quad \cancel{0}$
      $+2 \quad (-1) \times 2$

   d. SO3
      $+6 \swarrow \quad (-2) \times 3 = -6 + 6 = \cancel{0}$

4. When balancing redox reactions, the number of electrons
   __lost_____ should equal the number or electrons __Gained__.

5. Rules for balancing Half- Reactions:
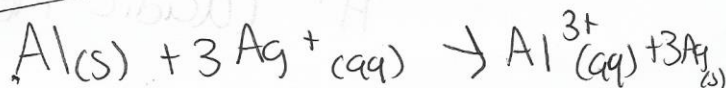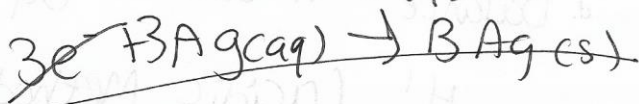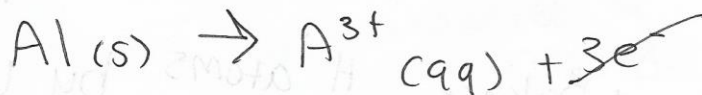   a. Write 2 sep. equations. 1 using Oxidation Substances, other using reduction Substances.
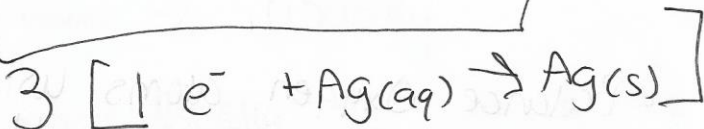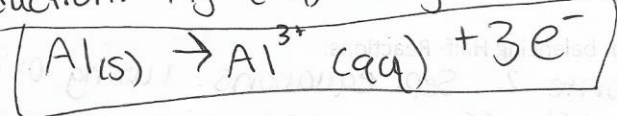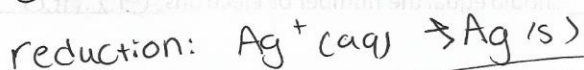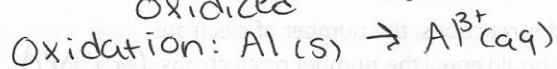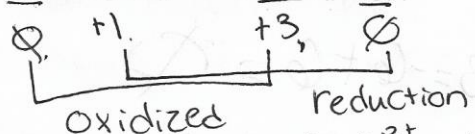
   b. Balance each kind of atom other than H + O by using Coefficients.

   c. Balance Oxygen atoms using H_2O.

   d. Balance H atoms by using H^+ (acidic Method).

e. use electrons as needed to obtain a balanced charge

f. Multiply the half-reactions by the simplest set of whole #'s so that elecr. gained = lost. Then add 1/2 reactions together.

6. Balance the following redox reaction:
a. $\underline{Al\ (s)} + \underline{Ag^+\ (aq)} \text{--------}> \underline{Al^{3+}(aq)} + \underline{Ag(s)}$

0, +1. +3, 0

Oxidized   reduction

Oxidation: $Al\ (s) \rightarrow Al^{3+}(aq)$

reduction: $Ag^+(aq) \rightarrow Ag\ (s)$

$\boxed{Al_{(s)} \rightarrow Al^{3+}\ (aq) + 3e^-}$

$Ag^+(aq) \rightarrow Ag(s)$

$\boxed{1e^- + Ag^+(aq) \rightarrow Ag(s)}$

$3\ [\ 1\ e^- + Ag(aq) \rightarrow Ag(s)\ ]$

$Al_{(s)} \rightarrow A^{3+}(aq) + 3e^-$

$3e^- + 3Ag(aq) \rightarrow 3Ag(s)$

$Al_{(s)} + 3\ Ag^+(aq) \rightarrow Al^{3+}(aq) + 3Ag_{(s)}$