

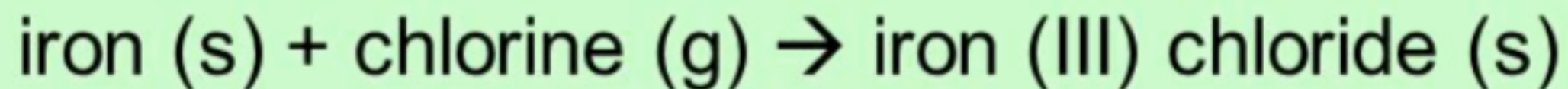
CHEMICAL REACTIONS



- ▶ **CHEMICAL REACTIONS** are a process in which substances interact, causing the formation of **new substances** with **new properties**
- ▶ Equations are used to describe chemical reactions

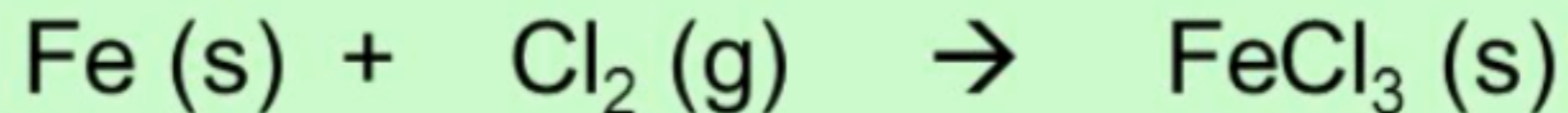
1 WORD EQUATIONS

- Names of the chemicals are written out in full



II SKELETON EQUATIONS

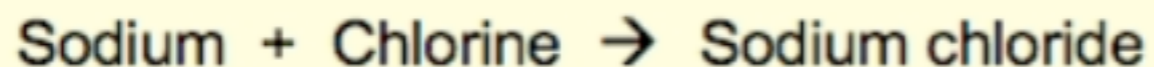
- Chemical formulas are used to represent the chemicals



Parts of the Equation

- ▶ Equations have **2 sides**

- ▶ REACTANTS  PRODUCTS
(get used up) (formed during the reaction)



- ▶ An arrow tells the **direction** in which the chemical reaction is going. The arrow reads as “**yields, forms, or produces**”
- ▶ Substances to the ***left of the arrow are called reactants***
- ▶ Substances to the ***right of the arrow are called products***
- ▶ If ***more than 1 reactant is used we use a “+”*** sign between them
- ▶ If ***more than 1 product is made we use a “+”*** sign between them

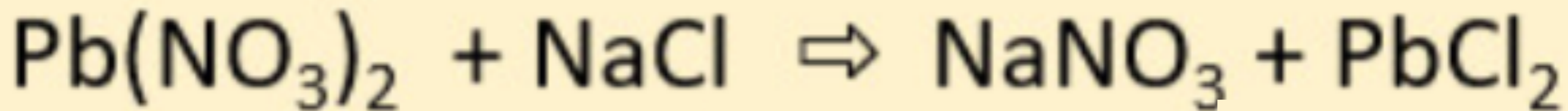
Example 1

Lead (II) nitrate solution is mixed with sodium chloride solution. The results produce a precipitate of Lead (II) chloride and a solution of sodium nitrate.

► **Word Equation:**

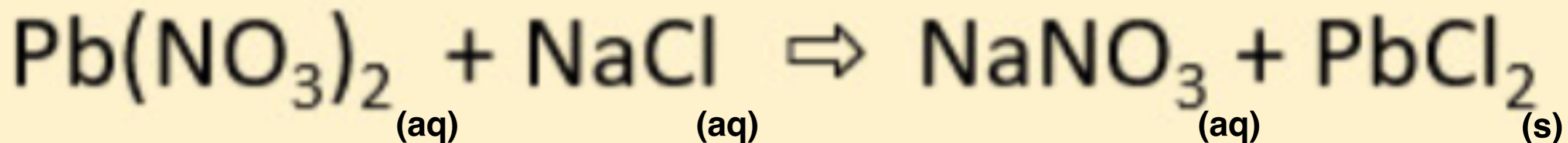
Lead (II) nitrate solution + Sodium chloride solution \longrightarrow
Lead (II) chloride solid + sodium nitrate solution

► **Chemical Equation:**



Equation Also Provides Details!!

- ▶ It is proper to give the chemical formulas and the state (*solid, liquid, gas, aqueous*) of the reactants and products



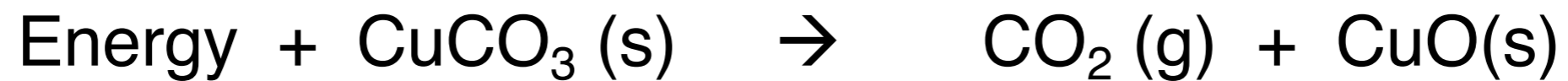
- ▶ (s) = Solid eg.. Fe (s) is iron metal
- ▶ (l) = liquid eg.. H₂O (l) water at room temperature
- ▶ (g) = gas eg.. O₂ (g) Oxygen at room temperature
- ▶ (aq) = solution eg.. NaCl (aq) salt mixed in water

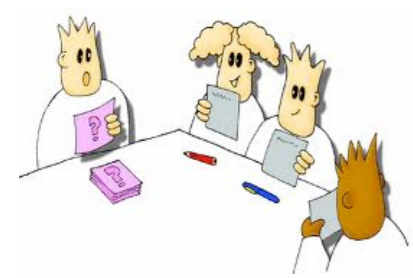
ENERGY: ITS ROLE IN REACTIONS

- ▶ Chemical reactions can either **absorb** or **release** energy
- ▶ If absorbing energy: energy is placed on the reactant side
reactants + energy \longrightarrow products
- ▶ If releasing energy: energy is placed on the product side
reactants \longrightarrow products + energy
- ▶ energy is usually in the form of heat or light

Example

- ▶ Ex: Green copper (II) carbonate powder is heated to produce carbon dioxide gas & copper (II) oxide solid residue





Iron and Sulfur are slightly heated; the result is iron (II) sulfide plus a lot of energy. More energy is released than add to the reactants

► **Word Equation:**

Iron solid + Sulfur solid \rightarrow
iron (II) sulfide solids + ENERGY
(note the energy went where there was the greater amount)

► **Chemical Equation:**



HOMEWORK:

- ▶ Pg 227 # 2-9
- ▶ Handout: 6.1 Writing Word equations