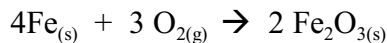


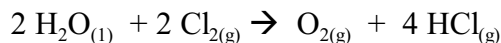
# Mass to Mass Problem Sheet 1

1. Iron (III) oxide is synthesized from metallic iron and oxygen gas, according to the equation:



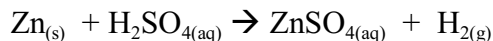
- Determine the masses of the reactants and products involved in the balanced equation.
- What mass of iron (III) oxide would be produced by the complete reaction of 1.00 g of iron?
- What mass of iron (III) oxide would be produced by the complete reaction of 1.00 g of oxygen gas?
- What mass of iron (III) oxide would be produced by the complete reaction of 5.00 g of oxygen gas?
- What mass of oxygen would have to be consumed in order to produce 20.0 g of iron (III) oxide?

2. Hydrogen chloride gas and oxygen gas are synthesized from chlorine gas and water, according to the equation:



- Determine the masses of the reactants and products involved in the balanced equation.
- What mass of water would be needed for the production of 96.0 g of oxygen gas?
- What mass of chlorine gas would be needed to produce 8.00 g of oxygen gas?
- What mass of hydrogen chloride gas would be produced by the complete reaction of 71.0 g of chlorine gas?
- What mass of oxygen gas could have been made by the complete reaction of 44.0 g of water?

3. If zinc is reacted with sulfuric acid to produce zinc sulfate and hydrogen gas according to the equation:



- Calculate the mass of zinc required to produce 47.0 g of hydrogen gas.
- Calculate the mass of zinc sulfate that could be produced from 784.0 g of sulfuric acid.
- Calculate the mass of zinc that would react with 200.0 g of sulfuric acid.
- Calculate the mass of zinc sulfate that would be produced along with 14.0 g of hydrogen gas.