

 Balance the equation & solve the problem. _Zn + _HCl → _ZnCl₂ + _H₂ How many grams of Zn are needed to produce 25.4 g ZnCl₂? 	2 Balance the equation & solve the problem. CaO +H ₂ O →Ca(OH) ₂ How many grams of CaO are needed to produce 29.55 g Ca(OH) ₂ ?
 Balance the equation & solve the problem. _Zn +HBr →ZnBr₂ +H₂ How many moles of Zn are needed to make 9.7 moles of ZnBr₂? 	4 Balance the equation & solve the problem. $-CaC_{2} + -H_{2}O \longrightarrow C_{2}H_{2} + CaO$ How many grams of CaC ₂ must be reacted to form 548 L C ₂ H ₂ at STP?
5 Balance the equation & solve the problem. $-HF + Ca(OH)_2 \longrightarrow CaF_2 + H_2O$ How many grams of Ca(OH)_2 are needed to completely react with 350. grams of HF?	6 Balance the equation & solve the problem. $C_{5}H_{12} + O_{2} \longrightarrow CO_{2} + H_{2}O$ How many liter of oxygen are required for the complete combustion of 0.75 mole of C ₅ H ₁₂ at STP?
7 Balance the equation & solve the problem. $-Cr_2O_3 + -H_2 \longrightarrow -Cr + -H_2O$ How many moles of hydrogen are needed to convert 76.5 grams of Cr_2O_3 to pure chromium?	8 Balance the equation & solve the problem. $-H_2O_2 \longrightarrow -H_2O + -O_2$ How many grams of water are produced by the decomposition of hydrogen peroxide to give 7.45 g oxygen?
 Balance the equation & solve the problem. NH₃ +O₂ →H₂O +NO If this reaction is run with 924 g NH₃, how many moles of NO will be formed? 	10 Balance the equation & solve the problem. Fe +O ₂ →Fe ₂ O ₃ How many grams of iron (III) oxide will be produced from 4.2 mol Fe?



11 Balance the equation & solve the problem. $_LiOH + _CO_2 \longrightarrow _Li_2CO_3 + _H_2O$ How many moles of LiOH are required to produce 20.0 mol Li_2CO_3?	Balance the equation & solve the problem. Mg +O ₂ →MgO What mass in grams of MgO is produced by 3.75 mol of magnesium?
 Balance the equation & solve the problem. NaCl +H₂SO₄ →Na₂SO₄ +HCl How many liters of HCl at STP are produced by reacting 43 g NaCl completely with sulfuric acid? 	14 Balance the equation & solve the problem. $_HgO \longrightarrow _Hg + _O_2$ How many moles of HgO are needed to produce 162 g O_2?
15 Balance the equation & solve the problemMg +HCl →MgCl ₂ +H ₂ How many grams of HCl will be used to react 4.7 mol Mg?	16 Balance the equation & solve the problem. $_NH_4NO_3 \longrightarrow _N_2O + _H_2O$ How many grams of ammonium nitrate are needed to produce 53.0 g N_2O?
 17 Balance the equation & solve the problem. KI +Pb(NO₃)₂ →PbI₂ +KNO₃ If 4.5 mol of potassium iodide is reacted, how many moles of lead (II) iodide will be produced? 	 Balance the equation & solve the problem. KClO₃ →KCl +O₂ In the decomposition of 23.4 mol KClO₃, how many liters of oxygen gas will be produced at STP?
 Balance the equation & solve the problem. _Zn + _CuSO₄ → _ZnSO₄ + _Cu How many grams of Cu will be produced from 48.4 g CuSO₄? 	20 Balance the equation & solve the problem. AgNo ₃ +NaCl →AgCl + NaNO ₃ How many grams of AgCl will be produced from 12 mol AgNO ₃ ?



21 Balance the equation & solve the problem. $_Li_3N + _H_2O \longrightarrow _NH_3 + _LiOH$ How molecules of NH_3 are produced when 57.8 g of Li_3N reacts with water?	22 Balance the equation & solve the problem. CaCO ₃ +H ₃ PO ₄ →Ca ₃ (PO ₄) ₂ +CO ₂ +H ₂ O How many grams of calcium carbonate are necessary to produce 0.77 L CO ₂ ?
 Balance the equation & solve the problem. _CO + _H₂ → _CH₃OH How many molecules of carbon monoxide are required to produce 375 g of the product? 	24 Balance the equation & solve the problem. $_C_2H_2 + _O_2 \longrightarrow _CO_2 + _H_2O$ How many liters of O_2 gas are required to react completely with 24.7 L C_2H_2 at STP?
25 Balance the equation & solve the problem. $_NaN_3 \longrightarrow _Na + _N_2$ If 125 g of NaN ₃ are decomposed, how many liters of N ₂ will be produced at STP?	26 Balance the equation & solve the problem. $Fe_2O_3 + CO \longrightarrow Fe + CO_2$ If 45.3 L of CO ₂ are produced in this reaction, how many grams of Fe ₂ O ₃ were reacted?
27 Balance the equation & solve the problem. $_C_{12}H_{22}O_{11} + _O_2 \longrightarrow _H_2O + _CO_2$ How many grams of sucrose, $C_{12}H_{22}O_{11}$, are required to produce 4.09 x 10 ²³ molecules of CO ₂ ?	28 Balance the equation & solve the problem. Li +Br₂ →LiBr How many moles of lithium are required to produce 72.5 g of LiBr?
29 Balance the equation & solve the problem. $-F_2 + -NH_3 \longrightarrow N_2F_4 + -HF$ Starting with 96.2 g of NH ₃ will produce how many molecules of HF?	30 Balance the equation & solve the problem. Zn ₃ As ₂ +HCl →AsH ₃ +ZnCl ₂ How many grams of hydrochloric acid are needed in order to obtain 26.4 L arsine (AsH ₃) gas at STP?



1 $3CaCO_3 + 2H_3PO_4 \longrightarrow Ca_3(PO_4)_2 + 3CO_2 + 3H_2O$ If the exact same amount of each reactant is used (8.5 g each), what will be the limiting reagent?	2 SiO ₂ + 4HF \longrightarrow SiF ₄ + 2H ₂ O 10.5 mol HF is reacted with 6.75 mol SiO ₂ . Identify the limiting reagent in this reaction.
3	4
$N_2 + 3H_2 \longrightarrow 2NH_3$ Which would be the limiting reagent if there is 6.8 mol N ₂ and 3.6 mol H ₂ available for this reaction?	$2ZnS + 3O_2 \longrightarrow 2ZnO + 2SO_2$ If 2.5 mol ZnS is heated in the presence of 4.0 mol O_2 which reactant will be used completely?
5	6
$2CuS + 3O_2 \longrightarrow 2CuO + 2SO_2$ How much copper (II) oxide, in grams, will be produced by the reaction of 17.5 g CuS and 11.5 g O_2 ? (Don't forget to determine the limiting reagent first!)	$2AgNO_3 + Ni \longrightarrow 2Ag + Ni(NO_3)_2$ How much of the excess reagent will remain if 450 g AgNO_3 is reacted with 325 g Ni?
7	8
3CuSO ₄ + 2Fe → 3Cu + Fe ₂ (SO ₄) ₃ If 0.15 mol of iron filings are placed in a solution that contains 0.85 mol CuSO ₄ , how many grams of copper will be formed? (Don't forget to determine the limiting reagent first!)	Na ₂ SO ₃ + 2HCl → 2NaCl + SO ₂ + H ₂ O How much SO ₂ , in grams, will be produced from 37.0 g Na ₂ SO ₃ and 32.4 g HCl? (Don't forget to determine the limiting reagent first!)
9	10
Calculate the percent yield if the theoretical yield is 60.0 g product and 52.7 g product was actually produced.	Calculate the percent yield if the theoretical yield is calculated to be 130 g product and 115 g product was actually produced.







