

1. (3 Pts) How many atoms are present in 585 g of KPF_6 (MM = 184.1 g/mol)? (Avogadro's number 6.02×10^{23})

A) 3.18×10^{21}

B) 1.91×10^{21}

C) 2.82×10^{25}

D) 1.43×10^{25}

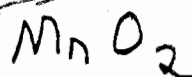
E) 1.53×10^{25}

585g KPF_6	KPF_6 mmol	8 mol Atoms	6.02×10^{23}	=	1.53×10^{25} Atoms
	184.1g KPF_6	1 mol KPF_6	mmol		

↳ Error

2. (3 Pts) The mineral pyrolusite is a compound of ^{55}Mn and ^{16}O . If 63% of the mass of pyrolusite is due to manganese, what is the empirical formula of pyrolusite? (Molar Masses: Mn 54.94, O 16.00)

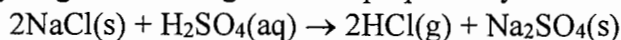
63g Mn	mmol	= 1.147	÷ 1.147 = 1
37g O	mmol	= 2.313	÷ 1.147 = 2
	16g		



3. (3 Pts) What is the mass in grams of 2.5 mol of glucose, $C_6H_{12}O_6$? (Atomic masses: C 12.01, H 1.01, O 16.00)

2.5 mol	180.18g	=	450 g
	mol		

4. (5 Pts) Hydrogen chloride gas can be prepared by the following reaction:



How many grams of HCl can be prepared from 2.00 mol H_2SO_4 and 2.56 mol NaCl?

(Atomic masses: Na 22.99, Cl 35.45, H 1.01, S 32.07, O 16.00)

Based on H_2SO_4 :

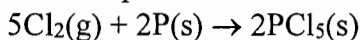
2.00 mol H_2SO_4	2 mol HCl	36.46g HCl	=	145.8g HCl
	1 mol H_2SO_4	mol HCl		

Based on NaCl:

2.56 mol NaCl	2 mol HCl	36.46g HCl	=	93.34g HCl
	2 mol NaCl	mol HCl		

 ←

5. (3 Pts) Chlorine gas reacts with phosphorus to produce phosphorus pentachloride. How many grams of PCl_5 are produced from 3.5 g of Cl_2 and excess P? (Atomic masses: Cl 35.45, P 30.97)



3.5g Cl_2	mol Cl_2	2 mol PCl_5	208.22g PCl_5	=	4.11g PCl_5
	70.9g Cl_2	5 mol Cl_2	mol PCl_5		

6. (3 Pts) Give the number of protons (p), neutrons (n), and electrons (e) in one atom of ^{238}U .

92 protons

$238 - 92 =$ 146 neutrons

92 electrons

7. (2 Pts) The formula mass of aluminum oxalate, $Al_2(C_2O_4)_3$, is 324.02
(Atomic masses: Al 26.98, C 12.01, O 16.00)

8. (3 Pts) Calculate the number of moles of bromine present in 4.50 mL of $Br_2(l)$, whose density is 3.12 g/mL. (Atomic mass Br 79.90)

4.50 mL Br_2	3.12g Br_2	mol Br_2	=	0.0879 mol Br_2
	mmL Br_2	159.8g Br_2		