Class copy!
Do not write on this. Turn it in before you leave!
Do all your work on binder paper and turn the binder paper in before you leave!

Mole Conversions Worksheet #1

Directions: Perform each conversion. Show all work, show crossing units out, make sure answer has units. Answers are in parenthesis. Make sure to check your work as you go!!! We will use this worksheet throughout the entire unit. You are not expected to complete it all in one sitting!

1) Mole → Mass
Using molar mass of each substance, convert the following quantities.

a. 10.0 mol Cr	(520 g)	f. 0.160 mol H_2O	(2.88 g)
b. 3.32 mol K	(130 g)	g. 5.08 mol $Ca(NO_3)_2$	(834 g)
c. 2.20×10^{-3} mol Sn	(0.261 g)	h. 15.0 mol H_2SO_4	(1470 g)
d. 0.720 mol Be	(6.48 g)	i. 4.52×10^{-5} mol C_2H_4	(1.27×10^{-3} g)
e. 2.40 mol N_2	(67.2 g)	j. 0.0112 mol K_2CO_3	(1.55 g)

2) Mass → Mole
Using molar mass of each substance convert the following quantities.

a. 72.0 g Ar	(1.80 mol)	f. 27.4 g NO_2	(0.596 mol)
b. 3.70×10^{-1} g B	(3.43×10^{-2} mol)	g. 5.00 g H_2	(2.50 mol)
c. 187 g Al	(6.93 mol)	h. 2.64×10^{-4} g Li_3PO_4	(2.28×10^{-6} mol)
d. 333 g SnF_2	(2.13 mol)	i. 11.0 g CH_4	(0.688 mol)
e. 7.21×10^{-2} g He	(1.80×10^{-2} mol)	j. 847 g $(NH_4)_2CO_3$	(8.82 mol)

3) What is the volume of the following gases?
Using molar volume, convert the following quantities.

a. 5.40 mol O_2 (121 L)
b. 3.20×10^{-2} mol CO_2 (0.717 L)
c. 0.960 mol SO_3 (21.5 L)

4) How many moles are in each of the following volumes?
Using molar volume, convert the following quantities.

a. 89.6 L Ne   (4.00 mol)
b. 1.00×10^3 L C_2H_6 (44.6 mol)
c. 5.42×10^{-1} F_2 (2.42×10^{-2} mol)

5) Find the number of moles in each of the number of representative particles.
Using Avogadro's Number, convert the following quantities.

a. 1.20×10^{25} atoms of P   (19.9 mol)
b. 3.87×10^{21} molecules of AlF_3 (6.43×10^{-3} mol)
c. 4.81×10^{14} molecules of NH_3 (7.99×10^{-10} mol)

6) How many representative particles are in each of the following mole quantities?
Using Avogadro's Number, convert the following quantities.

a. 1.24 mol Cl_2 (7.46×10^{23} molecules)
b. 4.20×10^{-3} mol K_2S (2.53×10^{21} molecules)
c. 34.02 mol $Ca(OH)_2$ (2.048×10^{25} molecules)

7) Convert the following two-step quantities, converting first to moles and then to the desired quantity.

a. Find the number of molecules in 60.0 g of N_2O.   (8.21×10^{23} molecules)
b. Find the volume of 3.24×10^{22} molecules of Ne   (1.21 L)
c. Find the mass of 18.0 L of CH_4 (12.9 g)
d. Find the volume of 835 g of SO_3 (234 L)
e. Find the mass of one atom of nickel.   (1×10^{-22} g)