KEY

MOLE CONVERSION HOMEWORK
Make the following conversions, showing all work.

1) 77.56 g of $CaCO_3$ to mole

$77.56 \text{ g} \times \dfrac{1 \text{ mole } CaCO_3}{100 \text{ g}} =$ **.78 mol**

2) 2.55×10^{24} molecules of KCl to grams

$2.55 \times 10^{24} \times \dfrac{1 \text{ mol}}{6.02 \times 10^{23}} \times \dfrac{74.55}{1 \text{ mol}}$

315.78 g

3) 0.0931 mol of $BaCl_2$ to grams

$.0931 \text{ mol} \times \dfrac{137. + 2(35.45)}{1 \text{ mol}}$

19.35 g

4) 1.55×10^{22} molecules to moles

$1.55 \times 10^{22} \dfrac{\text{molec}}{\text{mol}} \times \dfrac{1 \text{ mole}}{6.02 \times 10^{23} \text{ molecules}}$ = **.026 mol**

5) 0.664 moles of HF to molecules

$.664 \text{ mol} \times \dfrac{6.02 \times 10^{23} \text{ molecules}}{1 \text{ mol}} =$ **4.00×10^{23} molecules**

6) 86 g of $Fe(NO_3)_3$ to formula units

$86 \text{ g} \times \dfrac{1 \text{ mole}}{241.85 \text{ g}} \times \dfrac{6.02 \times 10^{23}}{1 \text{ mole}}$

2.14×10^{23} form units

7) 7.88×10^{23} molecules of CO_2 to grams

$7.88 \times 10^{23} \text{ molecules} \times \dfrac{1 \text{ mole}}{6.02 \times 10^{23} \text{ molecules}} \times \dfrac{44 \text{ g}}{1 \text{ mole}}$

57.59 g

8) 2.93 mol of MgF_2 to grams

$2.93 \text{ mol} \times \dfrac{62.581 \text{ g}}{1 \text{ mol}}$ 62.3

182.54 g

9) 7.56 g of $MgCO_3$ to moles

$7.56 \text{ g} \times \dfrac{1 \text{ mol}}{84.3 \text{ g}} =$ **.09 mol**

10) 8.55×10^{21} molecules of NaCl to grams

$8.55 \times 10^{21} \text{ molecules} \times \dfrac{1 \text{ mole}}{6.02 \times 10^{23} \text{ molecules}} \times \dfrac{58.45}{1 \text{ mole}}$

.83 g

11) 234.5 mol of ZnF_2 to grams

$234.5 \text{ mol} \times \dfrac{163.39 \text{ g}}{1 \text{ mole}}$

24,244.955 g or

2.42×10^4 g

12) 1.55×10^{26} molecules to moles

$1.55 \times 10^{26} \text{ molecules} \times \dfrac{1 \text{ mole}}{6.022 \times 10^{23}}$

257.48 mole

13) 9.4 moles of MgS to molecules

$$9.4 \, mol \times \frac{6.02 \times 10^{23} \, molecules}{1 \, mole}$$

$$= 5.66 \times 10^{24} \, molecules$$

15) 9.68 x 10²³ molecules of H₂O to grams

$$9.68 \times 10^{23} \, molecules \times \frac{1 \, mole}{6.02 \times 10^{23} \, molecules} \times \frac{18g}{1 \, mole}$$

$$28.94g$$

17) 58.4 L CO₂ to moles

$$58.4 \, L \times \frac{1 \, mol}{22.4 \, L} = 2.61 \, mol$$

19) 256 g NO₂ to L

$$256g \times \frac{1 \, mol}{46g} \times \frac{22.4 \, L}{1 \, mol}$$

$$= 124.67 \, L$$

14) 5066 g of Al(ClO₃)₃ to formula units

$$5066g \times \frac{1 \, mole}{277.33g} \times \frac{6.02 \times 10^{23}}{1 \, mole}$$

$$1.00 \times 10^{25} \, form \, units$$

16) 2.5 x 10⁻³ mol of CuF₂ to grams

$$2.5 \times 10^{-3} \, mol \times \frac{101.45g}{1 \, mol} = .25g$$

18) 2.5 moles O₂ to L

$$2.5 \, mol \times \frac{22.4 \, L}{1 \, mol} = 56 \, Liters$$

20) 5.0 L CH₄ to g

$$5.0 \, L \times \frac{1 \, mol}{22.4 \, L} \times \frac{16g}{1 \, mol}$$

$$= 3.57g$$