

Name:

Date:

Period:

## Mole Conversion Practice (Obj 1)

Directions: Make the following conversions. SHOW WORK (Problems without work receive no credit) AND INCLUDE UNITS.

1. Convert 25 L SO
- <sub>2</sub>
- to molecules SO
- <sub>2</sub>
- .

$$25 \text{ L SO}_2 \times \frac{1 \text{ mol SO}_2}{22.4 \text{ L SO}_2} \times \frac{6.02 \times 10^{23} \text{ molecules SO}_2}{1 \text{ mol SO}_2} = 6.72 \times 10^{23} \text{ molec. SO}_2$$

2. What is the volume of 3.94 mol of Kr?

$$3.94 \text{ mol Kr} \times \frac{22.4 \text{ L Kr}}{1 \text{ mol Kr}} = 88.3 \text{ L Kr}$$

3. Convert
- $7.5 \times 10^{24}$
- molecules NO
- <sub>3</sub>
- to L NO
- <sub>3</sub>
- .

$$7.5 \times 10^{24} \text{ molec NO}_3 \times \frac{1 \text{ mol NO}_3}{6.02 \times 10^{23} \text{ molec NO}_3} \times \frac{22.4 \text{ L NO}_3}{1 \text{ mol NO}_3} = 279 \text{ L NO}_3$$

4. Find the mol of 430 g V
- <sub>3</sub>
- (PO
- <sub>4</sub>
- )
- <sub>5</sub>
- .

$$\begin{aligned} 3 \text{ V} \times 50.94 &= 152.82 \\ 5 \text{ P} \times 30.97 &= 154.85 \\ 20 \text{ O} \times 16.00 &= 320.00 \\ \hline &627.67 \text{ g} \end{aligned}$$

$$430 \text{ g V}_3(\text{PO}_4)_5 \times \frac{1 \text{ mol V}_3(\text{PO}_4)_5}{627.67 \text{ g V}_3(\text{PO}_4)_5} = 0.685 \text{ mol V}_3(\text{PO}_4)_5$$

5. Find the atoms for 25.0 g Ne.

$$25.0 \text{ g Ne} \times \frac{1 \text{ mol Ne}}{20.18 \text{ g Ne}} \times \frac{6.02 \times 10^{23} \text{ atoms Ne}}{1 \text{ mol Ne}} = 7.46 \times 10^{23} \text{ atoms Ne}$$

6. How many moles would
- $8.94 \times 10^{22}$
- atoms Ca be?

$$8.94 \times 10^{22} \text{ atoms Ca} \times \frac{1 \text{ mol Ca}}{6.02 \times 10^{23} \text{ atoms Ca}} = 0.149 \text{ mol Ca}$$

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7. What is the volume of 3.94 mol of Kr?

$$3.94 \text{ mol Kr} \times \frac{22.4 \text{ L Kr}}{1 \text{ mol Kr}} = 88.3 \text{ L Kr}$$

8. How many moles are in 77.0 L C<sub>3</sub>H<sub>6</sub>?

$$77.0 \text{ L C}_3\text{H}_6 \times \frac{1 \text{ mol C}_3\text{H}_6}{22.4 \text{ L C}_3\text{H}_6} = 3.44 \text{ mol C}_3\text{H}_6$$

9. Find the L for 135 g SF<sub>6</sub>.

1S x 32.07 = 32.07  
6F x 19.00 = 114  
146.07g

$$135 \text{ g SF}_6 \times \frac{1 \text{ mol SF}_6}{146.07 \text{ g SF}_6} = 0.924 \text{ mol SF}_6$$

10. Find the mass of 600 L of Radon.

$$600 \text{ L Rn} \times \frac{1 \text{ mol Rn}}{22.4 \text{ L Rn}} \times \frac{222.02 \text{ g Rn}}{1 \text{ mol Rn}} = 5947 \text{ g Rn}$$

11. Find the mass of .340 mol BaCl<sub>2</sub>.

1Ba x 137.33 = 137.33  
2Cl x 35.45 = 70.90  
208.23

$$.340 \text{ mol BaCl}_2 \times \frac{208.23 \text{ g BaCl}_2}{1 \text{ mol BaCl}_2} = 70.8 \text{ g BaCl}_2$$

12. Find the formula units for 975 g Au(NO<sub>3</sub>)<sub>3</sub>.

1Au x 196.97 = 196.97  
3N x 14.01 = 42.03  
9O x 16.00 = 144.00  
383.00

$$975 \text{ g Au(NO}_3)_3 \times \frac{1 \text{ mol Au(NO}_3)_3}{383.00 \text{ g Au(NO}_3)_3} \times \frac{6.02 \times 10^{23} \text{ form. un. Au(NO}_3)_3}{1 \text{ mol Au(NO}_3)_3} = 1.53 \times 10^{24} \text{ form. un. Au(NO}_3)_3$$

13. How many formula units are in 5.15 mol AgCl?

$$5.15 \text{ mol AgCl} \times \frac{6.02 \times 10^{23} \text{ form. un. AgCl}}{1 \text{ mol AgCl}} = 3.10 \times 10^{24} \text{ form. un. AgCl}$$