

Names:

Date:

Period:

Two Step Conversion Practice (Obj 1: e)

Directions: Perform the following conversions INCLUDING WORK AND UNITS. Have the teacher sign off after you complete each part. Do not worry about getting problems completed outside of class time signed off.

Part 1:

Sign off:

1. How many atoms are in 5.0 g Be?

$$5.0 \text{ g Be} \times \frac{1 \text{ mol Be}}{9.0 \text{ g Be}} \times \frac{6.02 \times 10^{23} \text{ atoms Be}}{1 \text{ mol Be}} = 3.34 \times 10^{23} \text{ atoms Be}$$

2. How many formula units are in 9.8 g Ca(OH)₂?

$$\begin{array}{l} 1 \text{ Ca} \times 40.08 = 40.08 \\ 2 \text{ O} \times 16.00 = 32.00 \\ 2 \text{ H} \times 1.01 = 2.02 \\ \hline 74.10 \text{ g} \end{array}$$

$$9.8 \text{ g Ca(OH)}_2 \times \frac{1 \text{ mol Ca(OH)}_2}{74.10 \text{ g Ca(OH)}_2} \times \frac{6.02 \times 10^{23} \text{ formula units Ca(OH)}_2}{1 \text{ mol Ca(OH)}_2}$$

$$7.97 \times 10^{22} \text{ formula units Ca(OH)}_2$$

3. What is the mass of 3.61×10^{25} formula units of Li₂S?

$$\begin{array}{l} 2 \text{ Li} \times 6.94 = 13.88 \\ 1 \text{ S} \times 32.07 = 32.07 \\ \hline 45.95 \text{ g} \end{array}$$

$$3.61 \times 10^{25} \text{ formula units Li}_2\text{S} \times \frac{1 \text{ mol Li}_2\text{S}}{6.02 \times 10^{23} \text{ formula units Li}_2\text{S}} \times \frac{45.95 \text{ g Li}_2\text{S}}{1 \text{ mol Li}_2\text{S}}$$

$$2756 \text{ g Li}_2\text{S}$$

4. What is the mass of 1.44×10^{21} molecules C₆H₁₂O₆?

$$\begin{array}{l} 6 \text{ C} \times 12.01 = 72.06 \\ 12 \text{ H} \times 1.01 = 12.12 \\ 6 \text{ O} \times 16.00 = 96.00 \\ \hline 180.18 \text{ g} \end{array}$$

Part 2:

$$1.44 \times 10^{21} \text{ molec C}_6\text{H}_{12}\text{O}_6 \times \frac{1 \text{ mol C}_6\text{H}_{12}\text{O}_6}{6.02 \times 10^{23} \text{ molec C}_6\text{H}_{12}\text{O}_6} \times \frac{180.18 \text{ g C}_6\text{H}_{12}\text{O}_6}{1 \text{ mol C}_6\text{H}_{12}\text{O}_6}$$

$$0.431 \text{ g C}_6\text{H}_{12}\text{O}_6$$

Sign off:

5. How many molecules are in 64.0 L SO₂?

$$64.0 \text{ L SO}_2 \times \frac{1 \text{ mol SO}_2}{22.4 \text{ L SO}_2} \times \frac{6.02 \times 10^{23} \text{ molec SO}_2}{1 \text{ mol SO}_2} = 1.72 \times 10^{24} \text{ molec SO}_2$$

6. How many atoms are in 985 L Ar?

$$985 \text{ L Ar} \times \frac{1 \text{ mol Ar}}{22.4 \text{ L Ar}} \times \frac{6.02 \times 10^{23} \text{ atoms Ar}}{1 \text{ mol Ar}} = 2.65 \times 10^{25} \text{ atoms Ar}$$

7. What is the volume (L) of 4.45×10^{22} molecules of CO₂?

$$4.45 \times 10^{22} \text{ molec CO}_2 \times \frac{1 \text{ mol CO}_2}{6.02 \times 10^{23} \text{ molec CO}_2} \times \frac{22.4 \text{ L CO}_2}{1 \text{ mol CO}_2} = 1.66 \text{ L CO}_2$$

8. What is the volume of 1.50×10^{28} atoms of Kr?

$$1.50 \times 10^{28} \text{ atoms Kr} \times \frac{1 \text{ mol Kr}}{6.02 \times 10^{23} \text{ atoms Kr}} \times \frac{22.4 \text{ L Kr}}{1 \text{ mol Kr}} = 558140 \text{ L Kr}$$

Names:

Date:

Period:

Part 3:

Two Step Conversion Practice (Obj 1: e)

Sign off:

9. What is the volume of 432 g H₂O?

$$\begin{array}{l} 2\text{H} \times 1.01 = 2.02 \\ 10 \times 16.00 = 16.00 \\ \hline 18.02\text{g} \end{array}$$

$$432\text{g H}_2\text{O} \times \frac{1\text{mol H}_2\text{O}}{18.02\text{g H}_2\text{O}} \times \frac{22.4\text{L H}_2\text{O}}{1\text{mol H}_2\text{O}} = 537\text{L H}_2\text{O}$$

10. What is the volume of 330 g C₃H₆?

$$\begin{array}{l} 3\text{C} \times 12.01 = 36.03 \\ 6\text{H} \times 1.01 = 6.06 \\ \hline 42.09\text{g} \end{array}$$

$$330\text{g C}_3\text{H}_6 \times \frac{1\text{mol C}_3\text{H}_6}{42.09\text{g C}_3\text{H}_6} \times \frac{22.4\text{L C}_3\text{H}_6}{1\text{mol C}_3\text{H}_6} = 176\text{L C}_3\text{H}_6$$

11. What is the mass of 86.7 L of N₂O?

$$\begin{array}{l} 2\text{N} \times 14.01 = 28.02 \\ 10 \times 16.00 = 16.00 \\ \hline 44.02\text{g} \end{array}$$

$$86.7\text{L N}_2\text{O} \times \frac{1\text{mol N}_2\text{O}}{22.4\text{L N}_2\text{O}} \times \frac{44.02\text{g N}_2\text{O}}{1\text{mol N}_2\text{O}} = 170\text{g N}_2\text{O}$$

12. What is the mass of 176 L F₂?

$$2\text{F} \times 19 = 38.00$$

$$176\text{L F}_2 \times \frac{1\text{mol F}_2}{22.4\text{L F}_2} \times \frac{38.00\text{g F}_2}{1\text{mol F}_2} = 299\text{g F}_2$$