

# Example Of Two Step Problem

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What is the mass of 5.67L of  $\text{CO}_2$  @STP?

1. ? g  $\text{CO}_2$

2. 5.67L  $\text{CO}_2$  @STP

$$\text{molar mass } \text{CO}_2 = 1(12\text{g}) + 2(16\text{g}) = \frac{44\text{g } \text{CO}_2}{1 \text{ mole } \text{CO}_2}$$

$$\frac{22.4\text{L } \text{CO}_2 \text{ @STP}}{1 \text{ mole } \text{CO}_2}$$

3. By Equation 1)  $\# \text{ mole} = \frac{\# \text{L @STP}}{\left(\frac{22.4\text{L}}{1 \text{ mole}}\right)}$

$$\# \text{ mole} = \frac{5.67\text{L } \text{CO}_2 \text{ @STP}}{\frac{22.4\text{L } \text{CO}_2}{1 \text{ mole } \text{CO}_2}}$$

$$\# \text{ mole} = 0.2531 \text{ mole } \text{CO}_2$$

2)  $\# \text{ mole} = \frac{\# \text{g}}{\left(\frac{\text{g}}{\text{mole}}\right)}$

$$\# \text{g} = (\# \text{mole}) \left(\frac{\text{g}}{\text{mole}}\right)$$

$$\# \text{g} = (0.2531 \text{ mole } \text{CO}_2) \left(\frac{44\text{g } \text{CO}_2}{1 \text{ mole } \text{CO}_2}\right) = 11.13\text{g } \text{CO}_2 = \boxed{11.1\text{g } \text{CO}_2}$$

D.A.

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$$(5.67\text{L } \text{CO}_2 \text{ @STP}) \left(\frac{1 \text{ mole } \text{CO}_2 \text{ @STP}}{22.4\text{L } \text{CO}_2}\right) \left(\frac{44\text{g } \text{CO}_2}{1 \text{ mole } \text{CO}_2}\right) = 11.13\text{g } \text{CO}_2 = \boxed{11.1\text{g } \text{CO}_2}$$

Direction (use Mole wheel)

Start: Volume

Finish: MASS

(Cover OVER 2 arrow  
% 2 equation or ( )

1. L  $\rightarrow$  mole  $\frac{22.4\text{L}}{1 \text{ mole}}$

$$\# \text{ mole} = \frac{\# \text{L @STP}}{\frac{22.4\text{L}}{1 \text{ mole}}}$$

2. mole  $\rightarrow$  g molar mass

$$\# \text{ mole} = \frac{\# \text{g}}{\left(\frac{\text{g}}{\text{mole}}\right)}$$