

# Download File PDF Mole Ratio Pogil Answer Key

#Jenny



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#Markus Jensen



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Model 2 - Proposed Calculations for Mass of  $\text{NH}_3$  to Mass of  $\text{N}_2$

**Tokyo's Method**

$$\frac{x \text{ grams}}{30.0 \text{ g}} = \frac{1 \text{ mole } \text{N}_2}{2 \text{ moles } \text{NH}_3} \rightarrow x = \underline{\hspace{1cm}} \text{ g } \text{N}_2$$

**Rachel's Method**

$$30.0 \text{ g } \text{NH}_3 = \frac{1 \text{ mole } \text{NH}_3}{17.0 \text{ g } \text{NH}_3} = \underline{\hspace{1cm}} \text{ moles } \text{NH}_3$$
$$\frac{x \text{ mole } \text{N}_2}{\underline{\hspace{1cm}} \text{ mole } \text{NH}_3} = \frac{1 \text{ mole } \text{N}_2}{2 \text{ moles } \text{NH}_3} \rightarrow x = \underline{\hspace{1cm}} \text{ mole } \text{N}_2$$
$$\underline{\hspace{1cm}} \text{ mole } \text{N}_2 = \frac{28.0 \text{ g } \text{N}_2}{1 \text{ mole } \text{N}_2} = \underline{\hspace{1cm}} \text{ g } \text{N}_2$$

**Jerry's Method**

$$30.0 \text{ g } \text{NH}_3 = \frac{1 \text{ mole } \text{NH}_3}{17.0 \text{ g } \text{NH}_3} = \frac{1 \text{ mole } \text{N}_2}{2 \text{ moles } \text{NH}_3} = \frac{28.0 \text{ g } \text{N}_2}{1 \text{ mole } \text{N}_2} = \underline{\hspace{1cm}} \text{ g } \text{N}_2$$

11. Model 2 shows three proposed calculations to solve the problem in Question 10. Complete the calculations in Model 2 by filling in the underlined values.

12. Which method does not use the mole ratio in an appropriate manner? Explain.

13. Two of the methods in Model 2 give the same answer. Show that they are mathematically equivalent methods.

$$\frac{30 \times \frac{1}{17}}{2} = \frac{30}{34} = \frac{15}{17} \text{ moles } \text{N}_2$$
$$\frac{15}{17} \text{ moles } \text{N}_2 \times \frac{28 \text{ g } \text{N}_2}{1 \text{ mole } \text{N}_2} = \frac{420}{17} \text{ g } \text{N}_2 \approx 24.7 \text{ g } \text{N}_2$$

14. Use either Rachel's or Jerry's method from Model 2 to calculate the mass of hydrogen needed to make 30.0 g of ammonia.  $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightarrow 2\text{NH}_3(\text{g})$

$$30 \text{ g } \left( \frac{1 \text{ mole } \text{NH}_3}{17 \text{ g } \text{NH}_3} \right) \times \frac{3 \text{ moles } \text{H}_2}{2 \text{ moles } \text{NH}_3} = 2.65 \text{ moles } \text{H}_2$$

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