

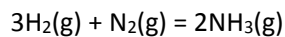
## Answer on Question#39097 - Chemistry - Inorganic Chemistry

### Question

How many grams of H<sub>2</sub> are needed to produce 10.71 g of NH<sub>3</sub>?

### Solution:

NH<sub>3</sub> can be produced by the reaction:



Molar mass of H<sub>2</sub> equals:

$$M(\text{H}_2) = 2M(\text{H}) = 2 \cdot 1 = 2 \frac{\text{g}}{\text{mole}}$$

Mass of 3 moles of hydrogen equals:

$$3 \cdot 2 = 6\text{g}$$

Molar mass of NH<sub>3</sub> equals:

$$M(\text{NH}_3) = M(\text{N}) + 3M(\text{H}) = 14 + 3 \cdot 1 = 17 \frac{\text{g}}{\text{mole}}$$

Mass of 2 moles of NH<sub>3</sub> equals:

$$2 \cdot 17 = 34\text{g}$$

Then we make a proportion:

6 g of H<sub>2</sub> produce 34 g of NH<sub>3</sub>

x g of H<sub>2</sub> – 10.71 g of NH<sub>3</sub>

$$x = \frac{6 \cdot 10.71}{34} = 1.89\text{ g}$$

**Answer:** m(H<sub>2</sub>) = 1.89 g.