

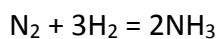
## Answer on Question #41594, Chemistry, Other

### Question:

What is the maximum amount of ammonia formed when 14 gm of N<sub>2</sub> is mixed with 2 gm of H<sub>2</sub>.

### Solution:

Reaction equation is:



The maximum amount of ammonia can be calculated according to chemical equation:

$$n(\text{NH}_3) = 2n(\text{N}_2), n(\text{NH}_3) = \frac{2}{3}n(\text{H}_2)$$

$$n(\text{N}_2) = \frac{m(\text{N}_2)}{M(\text{N}_2)} = \frac{14}{28} = 0.5 \text{ mol}$$

$$n(\text{H}_2) = \frac{m(\text{H}_2)}{M(\text{H}_2)} = \frac{2}{2} = 1 \text{ mol}$$

$$3n(\text{N}_2) = n(\text{H}_2)$$

As there is lack of hydrogen, the amount of ammonia corresponds to the hydrogen amount in such way:

$$n(\text{NH}_3) = \frac{2}{3} * n(\text{H}_2) = \frac{2}{3} \text{ mol}$$

$$m(\text{NH}_3) = n(\text{NH}_3) * M(\text{NH}_3) = \frac{2}{3} * 17 = 11.33 \text{ g}$$

**Answer:** 11.33 g