how many grams of ammonia will be obtained from 40 g of nitrogen and excess of hydrogen , if the percent yield is 87% ?

The reaction is:

$$N_2 + 3H_2 = 2NH_3$$

The amount of nitrogen in moles:

$$v_{N_2} = \frac{m}{M_{N_2}} = \frac{40g}{28.014\ g/mol} = 1.429mol$$

Theoretical amount of ammonia produced:

$$v_{NH_3} = 2 * v_{N_2}$$

Experimental amount of ammonia produced:

$$v_{exp} = 0.87 * v_{NH_3} = 1.74 * v_{N_2}$$

Mass of produced ammonia:

$$m_{NH_3} = v_{exp} * M_{NH_3} = 1.74 * 1.429mol * \ 17.031\ g/mol = 42.313g$$

Answer: **42.313g**