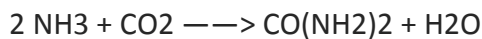


### Answer on Question #81827, Chemistry / General Chemistry

Ammonia can be reacted with carbon dioxide to form urea, as shown below. If 170 g of ammonia were consumed in a reaction with excess carbon dioxide, what mass of urea could be produced?

The molar mass of ammonia is 17 g/mole and that of urea is 60 g/mole.



Thanks!

#### Solution

Find amount of substance of ammonia:

$$n = m/M$$

$$n(\text{NH}_3) = 170 \text{ g} / 17 \text{ g/mol} = 10 \text{ mol}$$

According to equation 2 mol of  $\text{NH}_3$  give 1 mole of  $\text{CO}(\text{NH}_2)_2$ .

We have 10 mol of  $\text{NH}_3$  that give  $x$  mol of  $\text{CO}(\text{NH}_2)_2$

Solve the proportion:

$$\frac{2}{10} = \frac{1}{x}$$

$$x = 5$$

$$n(\text{CO}(\text{NH}_2)_2) = 5 \text{ mol}$$

$$m = M \times n$$

$$m(\text{CO}(\text{NH}_2)_2) = 60 \text{ g/mol} \times 5 \text{ mol} = 300 \text{ g}$$

**Answer: 300 g**