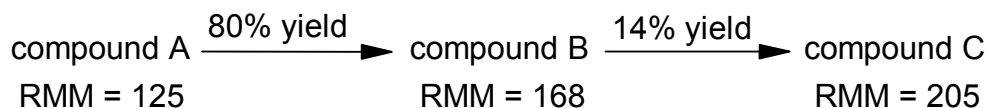


Percentage Yield Example 2

In a two step synthesis, the percentage yields are 80% and 14% respectively for the two reactions.



How much of compound A would you need to form 1g of compound C?

$$\begin{aligned} \text{moles C} &= \text{mass} / \text{rmm} \\ &= 1 / 205 \\ &= 4.878 \times 10^{-3} \end{aligned}$$

	B	C
yield ratio	100	14
moles	= 0.0348	4.878×10^{-3}

$$4.878 \times 10^{-3} \times (100 / 14)$$

	A	B
yield ratio	100	80
moles	= 0.04355	0.0348

$$0.0348 \times (100 / 80)$$

$$\begin{aligned} \text{mass A} &= \text{moles} \times \text{rmm} \\ &= 0.04355 \times 125 \\ &= \underline{\underline{5.44 \text{ g}}} \end{aligned}$$

In experimental chemistry, sometimes only tiny amounts of products are formed. Products can be identified using NMR and IR, which only require very small amounts of a compound for recognition.

In larger scale syntheses of pharmaceutical compounds, often very large amounts of starting materials are required. Much research goes into developing high yield reaction steps.