lodine is prepared both in the laboratory and commercially by adding $\mathrm{Cl}(\mathrm{g})$ to an aqueous solution containing sodium iodide:
$2 \mathrm{Nal}(\mathrm{aq})+\mathrm{Cl} 2(\mathrm{~g})--\& \mathrm{gt} ; \mathrm{I} 2(\mathrm{~s})+2 \mathrm{NaCl}(\mathrm{aq})$
How many grams of sodium iodide, Nal, must be used to produce 40.4 g of iodine, I2?

## Solution

| x g | 40.4 g |
| :---: | :---: |
| $2 \mathrm{NaI}(\mathrm{aq})+\mathrm{Cl}_{2}(\mathrm{~g}) \rightarrow \mathrm{I}_{2}(\mathrm{~s})+2 \mathrm{NaCl}(\mathrm{aq})$ |  |
| 300 g | 254 g |
| $X=40.4$ | $\mathrm{g}=47.7 \mathrm{~g}$ |

Answer: 47.7 g of sodium iodide

