Stoichiometry Conversions with Mass
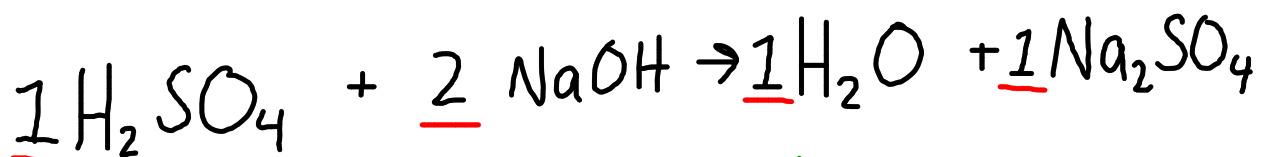
Mass A $\xrightarrow[\text{of "A"}]{\div \text{ by MM}}$ Mole A $\xrightarrow[\text{from balanced eqn}]{\text{use coefficients}}$ Mole B

OR

Mole A $\xrightarrow[\text{from balanced eqn}]{\text{use coefficients}}$ Mole B $\xrightarrow[\text{of "B"}]{\text{x by MM}}$ Mass B

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$$1 \underline{H_2 SO_4} + \underline{2} \, NaOH \rightarrow \underline{1} H_2 O + \underline{1} Na_2 SO_4$$

"A"
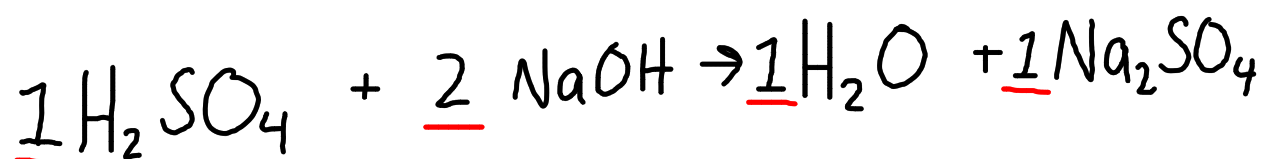
If I have 2 g of $Na_2 SO_4$, how many moles of $H_2 O$ are also made?

"B"

$$2 \, g \, Na_2 SO_4 \times \frac{1 \, mol \, Na_2 SO_4}{142 \, g \, Na_2 SO_4} \times \frac{1 \, mol \, H_2 O}{1 \, mol \, Na_2 SO_4} = 0.014 \, mol \, H_2 O$$

$$1 \underline{H_2SO_4} + \underline{2}NaOH \rightarrow \underline{1}H_2O + \underline{1}Na_2SO_4$$

How many grams of water H_2O "B" can be made from

15.6 mol of NaOH "A"?

$$15.6 \text{ mol NaOH} \times \frac{1 \text{ mol } H_2O}{2 \text{ mol NaOH}} \times \frac{18 g \, H_2O}{1 \text{ mol } H_2O} = \boxed{140.4 \ g \ H_2O}$$

Entire Stoichiometry Road Map

Mass A $\xrightarrow[\text{of "A"}]{\div \text{ by MM}}$ Mole A $\xrightarrow[\text{from balanced eqn}]{\text{use coefficients}}$ Mole B $\xrightarrow[\text{of "B"}]{\text{x by MM}}$ Mass B

$\div$ by | 22.4 L   x by | 22.4 L

Liters A   Liters B

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