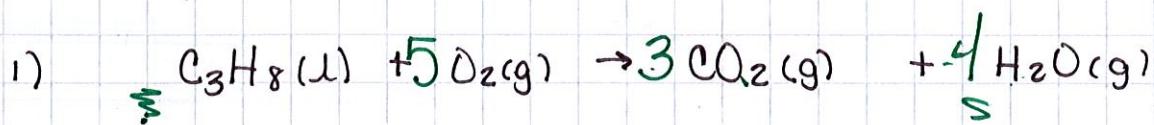


Mass - to - mass Stoichiometry

Examples



What mass of water is produced from the reaction of 45.00 g propane w/ excess oxygen?

<u>45.00 g C₃H₈</u>	1 mol C ₃ H ₈	4 mol H ₂ O	18.02 g H ₂ O	73.53 g H ₂ O
	44.11 g C ₃ H ₈	1 mol C ₃ H ₈	1 mol H ₂ O	

MM

$$\begin{aligned} 3 \text{ C} \times 12.01 \text{ g} &= 36.03 \text{ g} \\ 8 \text{ H} \times 1.01 \text{ g} &= 8.08 \text{ g} \\ &\hline 44.11 \text{ g} \end{aligned}$$

MM

$$\begin{aligned} 2 \text{ H} \times 1.01 \text{ g} &= 2.02 \text{ g} \\ 1 \text{ O} \times 16.00 \text{ g} &= 16.00 \text{ g} \\ &\hline 18.02 \text{ g} \end{aligned}$$



what mass of sulfur (S₈) is needed to make 1000. g of iron (II) sulfide?

<u>1000. g FeS</u>	1 mol FeS	1 mol S ₈	256.56 g S ₈	<u>364.76 g S₈</u>
	87.92 g FeS	8 mol FeS	1 mol S ₈	

MM

$$\begin{aligned} \text{Fe} & 55.85 \text{ g} \\ \text{S} & 32.07 \text{ g} \\ & \hline 87.92 \text{ g} \end{aligned}$$

$$\begin{aligned} \text{MM } 8 \text{ S} \times 32.07 \text{ g} \\ = 256.56 \text{ g} \end{aligned}$$

$$\frac{10 \cdot 5}{2}$$



what mass (theoretical yield) of chromium (III) nitrate made when 10.0 g. of lithium nitrate reacts w/ excess chromium (III) sulfate? QWEN

<u>10.0 g LiNO₃</u>	<u>1 mol LiNO₃</u>	<u>2 mol Cr(NO₃)₃</u>	<u>238.03</u>	<u>g Cr(NO₃)₃</u>
	68.95	1 mol LiNO ₃	1 mol Cr(NO ₃) ₃	
	g LiNO ₃			

$$\frac{1 \text{ Cr} \times 52.00 \text{ g}}{3 \text{ N} \times 14.01 \text{ g}} = \frac{52.00 \text{ g}}{42.03 \text{ g}}$$

$$\frac{9 \text{ O} \times 16.00 \text{ g}}{238.03 \text{ g}} = \frac{144.00 \text{ g}}{238.03 \text{ g}}$$

Step 1

converting
g → moles

1 mol given
mm given

Step 2

mole ratio

mol ?
mol given

↓

from balanced
eqn

Step 3

converting mole
→ g

mm ?
1 mol ?