

## Stoichiometry Review Problems

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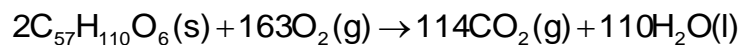
1. How many moles of  $O_2$  should be supplied to burn 1 mol of  $C_3H_8$  (propane) molecules in a camping stove?

2. How many moles of  $O_2$  molecules should be supplied to burn 1 mol of  $CH_4$  molecules in a domestic furnace?

3. Calculate the mass of  $\text{Al}_2\text{O}_3$  produced when 100 g of aluminum burns in oxygen.

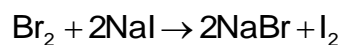
4. "Slaked lime" ( $\text{Ca}(\text{OH})_2$ ) is formed from "quick-lime" ( $\text{CaO}$ ) by adding water. What mass of water is needed to convert 10 kg of quicklime to slaked lime? What mass of slaked lime is produced?

5. Camels store the fat tristearin ( $C_{57}H_{110}O_6$ ) in the hump. As well as being a source of energy, the fat is a source of water, because when it is used the following reaction takes place. What mass of water is available from 1.0 kg of fat?

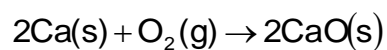


6. The compound diborane ( $B_2H_6$ ) was at one time considered for use as a rocket fuel. How many grams of liquid oxygen would a rocket have to carry to burn 10 kg of diborane completely? The products of the combustion are  $B_2O_3$  and  $H_2O$ .

7. Given the balanced chemical equation, how many moles of sodium bromide (NaBr) could be produced from 0.172 mol of bromine (Br<sub>2</sub>)?



8. How many formula units of calcium oxide (CaO) can be produced from  $4.9 \times 10^5$  molecules of oxygen gas (O<sub>2</sub>) that react with calcium (Ca) according to this balanced chemical equation?



9. Aluminum metal (Al) reacts with sulfur (S) to produce aluminum sulfide ( $\text{Al}_2\text{S}_3$ ) according to the following chemical equation. How many atoms of aluminum will react completely with  $1.33 \times 10^{24}$  atoms of sulfur?

