Stoichiometry

1) The hydrochloric acid (HCl) secreted in your stomach can be neutralized by antacid products which contain aluminum hydroxide.

Equation: 3 HCl (aq) + $Al(OH)_3$ (s) --> $AlCl_3$ (aq) + $3 H_2O$ (l)

a) How many grams of aluminum hydroxide are required to neutralize 0.220 moles of stomach acid?

b) What mass of water would be produced by the reaction?

2) If a car engine burns 500. grams of octane (C_8H_{18}) when idling for one hour, how many grams of carbon dioxide are produced?

Equation: $2 C_8 H_{18} (l) + 25 O_2 (g) --> 16 CO_2 (g) + 18 H_2 O (g)$

3) How many grams of oxygen gas are produced by the decomposition of 175 grams of mercury (II) oxide?

Equation: 2 HgO (s) \rightarrow 2 Hg (s) + O₂ (g)

Stoichiometry

Name:

Directions: Show all steps in your solution. Remember to include units in your work.

1) The hydrochloric acid (HCl) secreted in your stomach can be neutralized by antacid products which contain calcium carbonate.

Equation: 2 HCl (aq) + CaCO₃ (s) --> CaCl₂ (aq) + H₂O (l) + CO₂ (g)

a) How many grams of calcium carbonate are required to neutralize 0.220 moles of hydrochloric acid?

b) What mass of water would be produced by the reaction?

2) If a gas grill burns 1500. grams of propane (C_3H_8) when running for one hour, how many grams of carbon dioxide are produced?

Equation: $C_3H_8(l) + 5 O_2(g) --> 3 CO_2(g) + 5 H_2O(g)$

3) How many grams of oxygen gas are produced by the decomposition of 175 grams of sodium oxide?

Equation: $2 \text{ Na}_2 \text{O}$ (s) --> 4 Na (s) + O_2 (g)