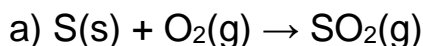


Worksheet for the last session of chemical changes

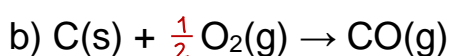
1. When 56 g of nitrogen react completely with hydrogen, it yields 68 g of ammonia. What quantity of hydrogen has reacted?

Using the Mass Conservation Law, you can write the next equation ($56 + x = 68$). Clearing "x" in the equation: $x = 12$ g of hydrogen.

2. Balance the following chemical equations and write the mass of each substance using the periodic table in your book:



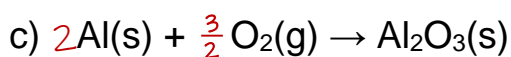
$$32 \text{ g} + 32 \text{ g} = 64 \text{ g}$$



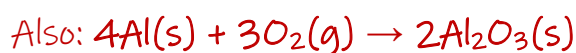
$$12 \text{ g} + 16 \text{ g} = 28 \text{ g}$$



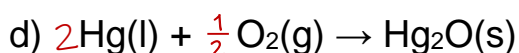
$$24 \text{ g} + 32 \text{ g} = 56 \text{ g}$$



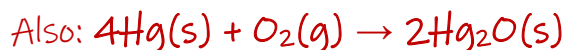
$$54 \text{ g} + 48 \text{ g} = 102 \text{ g}$$



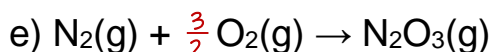
$$108 \text{ g} + 96 \text{ g} = 204 \text{ g}$$



$$401 \text{ g} + 16 \text{ g} = 417 \text{ g}$$



$$802 \text{ g} + 32 \text{ g} = 834 \text{ g}$$



$$28 \text{ g} + 48 \text{ g} = 76 \text{ g}$$



$$56 \text{ g} + 96 \text{ g} = 152 \text{ g}$$

3. Complete the table below ($\text{I} = 127$; $\text{H} = 1$):

2HI	\rightarrow	I_2	$+$	H_2
100 g		99,2 g		0,8 g
212,4 g		210,7 g		1,7 g
350 g		347,2 g		2,8 g

The first two examples can be calculated using the Mass Conservation Law. The third example is calculated using the proportion between substances in the previous cases.

4. Marble is made mainly from calcium carbonate (CaCO_3) which reacts with acids, for example hydrochloric acid (HCl), and produces calcium chloride (CaCl_2), carbon dioxide (CO_2) and water (H_2O).

Data: C = 12 ; O = 16 ; Cl = 35,5 ; H = 1.

a) Which of the substances are the reagents and what are the products?

The reagents are CaCO_3 and HCl . The products are CaCl_2 , CO_2 and H_2O .

b) Write the balanced equation of this chemical reaction.



c) How many grams of water will be obtained when 100 g of calcium carbonate react?

The molecular mass of CaCO_3 is 100 g!!

The proportion between the masses of calcium carbonate and water in the equation is 100:18. The answer is 18 g of water.