

Task

Information: the relative atomic masses of various elements

Element	S	O	Al	Cl	N	F	C	H	Mg	Fe	P
A_r	32	16	27	35.5	14	19	12	1	24	56	31

Use the information given to answer the following questions.

1. Find the simplest formula of an oxide of sulfur when 16 g of sulfur reacts completely with 24 g of oxygen.
2. 18 g of aluminium reacted completely with 71 g of chlorine. What is the empirical formula of the compound formed?
3. Find the empirical formula when 14 g of nitrogen reacts completely with 38 g of fluorine.
4. What is the simplest formula of the compound formed when 0.24 g of carbon was reacted completely with 0.08 g of hydrogen gas?
5. When analysed, a compound was found to contain 1.2 g of magnesium, 1.6 g of sulfur and 3.2 g of oxygen. What is the empirical formula of the compound?

- 6.** Find the empirical formula when 6 g of carbon reacts completely with 32 g of sulfur.
- 7.** Find the simplest formula for phosphorus chloride when 0.62 g of phosphorus reacts with 2.13 g of chlorine.
- 8.** Find the simplest formula when 2.8 g of iron reacts with 2.4 g of sulfur.
- 9.** A sugar was found to contain 40 g of carbon, 6.67 g of hydrogen and 53.33 g of oxygen.
- a)** What is its empirical formula?
- b)** What is its molecular formula if the molecular mass of one mole is 180 g?
- 10.** A compound was found to contain 14.4 g of carbon, 2.2 g of hydrogen and 17.6 g of oxygen.
- a)** What is its empirical formula?
- b)** What is its molecular formula when its relative molecular mass is 684 g?

Answers

1. SO_3
2. AlCl_3
3. NF_2
4. CH_4
5. MgSO_4
6. C_2S
7. PCl_3
8. Fe_2S_3
9. a) CH_2O b) $\text{C}_6\text{H}_{12}\text{O}_6$
10. a) $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ b) $\text{C}_{24}\text{H}_{44}\text{O}_{22}$