Question #65483, Chemistry / General Chemistry

A 50.51 g sample of a compound made from phosporus and cholrine is decomposed. Analysis of the products showed that 11.3 g of phosprous atoms were produced. What is the empirircal formula of the compund?

Answer*:*

$$m(P + Cl) = 50.51\ g$$
$$m(P) = 11.3\ g$$
$$m(Cl) = 50.51 - 11.3 = 39.21\ g$$

Now,

$$P : Cl = \frac{11.3\ g}{31\frac{g}{mol}} : \frac{39.21\ g}{35.5\frac{g}{mol}} = 0.3645\ mol : 1.1045\ mol = 1 : 3$$

Formula is **PCl_3**