

05/31/24

Rubidium (Rb) has two major isotopes: Rb-85, an atom of which has a mass of 84.912 amu and Rb-87, an atom of which has a mass of 86.9090 amu. If you look on the periodic table, it shows the atomic weight of Rb as being 85.47. What percent of Rb atoms are Rb-85 and what percent are Rb-87?

$$x = \text{fraction Rb-85}$$

$$1-x = \text{fraction Rb-87}$$

$$x(84.912 \text{ amu}) + (1-x)(86.9090 \text{ amu}) = 85.47 \text{ amu}$$

$$84.912x + 86.9090 - 86.9090x = 85.47$$

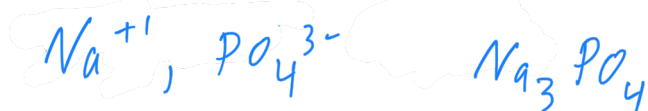
$$-1.997x = -1.439$$

$$x = 0.72$$

so 72% Rb-85

28% Rb-87

What is the chemical formula of sodium phosphate?



How many magnesium ions are there in one magnesium phosphate?



Gallium bactate has the formula $\text{Ga}_2(\text{bactate})_3$ and sodium bactate has the formula $\text{Na}_2(\text{bactate})$. What is the charge of the gallium ion? Note that "bactate" is a made-up ion.

Na^+ so bactate must be -2 so Ga must be $+3$