Tutorial 1 Question

- Text: Ch. 42: Pr. 6.
- (*a*) What is the approximate radius of a $^{64}_{29}\mathrm{Cu}$ nucleus? (*b*) Approximately what is the value of A for a nucleus whose radius is 3.9×10^{-15} m?

Solution

(*a*) We know $\boxed{r \approx (1.2 \times 10^{-15}\ \mathrm{m}) A^{1/3}}$ and $^{64}_{29}\mathrm{Cu}$ has an atomic mass $A = 64$ so

$$r \approx (1.2 \times 10^{-15}\ \mathrm{m})(64)^{1/3} \approx 4.8 \times 10^{-15}\ \mathrm{m}.$$

(*b*) This time we are given $r = 3.9 \times 10^{-15}\ \mathrm{m}$ and asked to estimate the atomic mass A,

$$A \approx \left[\frac{r}{1.2 \times 10^{-15}\ \mathrm{m}}\right]^3 \approx 34.$$