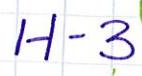
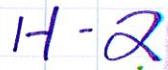


Isotopes

atoms of the same element
w/ differing #'s of neutrons
(they have different mass #'s too!)

Ex) Hydrogen - has 3 isotopes



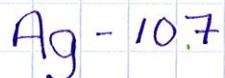
$$\begin{aligned}\# p^+ &= 1 \\ \# e^- &= 1 \\ \# n^0 &= 1 - 1 = 0 \\ 99.97\% &\end{aligned}$$

$$\begin{aligned}\# p^+ &= 1 \\ \# e^- &= 1 \\ \# n^0 &= 2 - 1 = 1 \\ .625\% &\end{aligned}$$

$$\begin{aligned}\# p^+ &= 1 \\ \# e^- &= 1 \\ \# n^0 &= 3 - 1 = 2 \\ .0005\% &\end{aligned}$$

refers to mass #

Ex) Silver has 2 isotopes



$$\begin{aligned}\# p^+ &= 47 \\ \# e^- &= 47 \\ \# n^0 &= 107 - 47 = \underline{\underline{60}}\end{aligned}$$

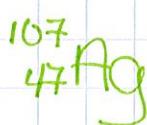


$$\begin{aligned}\# p^+ &= 47 \\ \# e^- &= 47 \\ \# n^0 &= 109 - 47 = \underline{\underline{62}}\end{aligned}$$

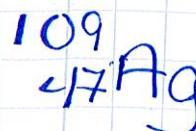
isotopic symbol

mass #

atomic #



symbol
for
element



Why do we care about isotopes?

specific isotopes are useful.

- Ex) 1. Heavy water - is water made using the isotope, deuterium (^2H). It's used in nuclear reactors in spent fuel cooling pools to absorb radiation. Poisonous to plants & animals
2. Radiocarbon dating - to find the age of fossils. Uses ^{14}C , a radioactive isotope. The ratio of ^{14}C to ^{12}C is constant inside living things but when something dies, the ^{14}C decays away so that ratio changes
3. Medical Equipment sterilization - uses ^{60}Co , also radioactive, gives off gamma radiation, which destroys harmful bacteria.