

Name : _____ Date : _____

Isotopes and average atomic mass worksheet with answers

Calculate the average atomic mass of the isotopes of the following elements.

1) Nickel

Isotope	Relative Abundance (in %)
^{58}Ni	68.274%
^{60}Ni	26.095%
^{61}Ni	1.134%
^{62}Ni	3.593%
^{64}Ni	0.904%

Average atomic mass of nickel =

2) Silver

Isotope	Relative Abundance (in %)
^{107}Ag	51.84%
^{108}Ag	48.16%

Average atomic mass of silver =

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Answers

1) Nickel

Isotope	Relative Abundance (in %)
^{58}Ni	68.274%
^{60}Ni	26.095%
^{61}Ni	1.134%
^{62}Ni	3.593%
^{64}Ni	0.904%

$$\begin{aligned}\text{Average atomic mass of nickel} &= (58 \times 0.68274) + (60 \times 0.26095) + (61 \times 0.01134) \\ &+ (62 \times 0.03593) + (64 \times 0.00904) = 39.59892 + 15.657 + 0.69174 + 2.22766 + 0.57856 \\ &= 58.75388 \text{ amu}\end{aligned}$$

2) Silver

Isotope	Relative Abundance (in %)
^{107}Ag	51.84%
^{108}Ag	48.16%

$$\begin{aligned}\text{Average atomic mass of silver} &= (107 \times 0.5184) + (108 \times 0.4816) = 55.4688 + 52.0128 \\ &= 107.4816 \text{ amu}\end{aligned}$$