

ISOTOPE WORKSHEET KEY

Complete the following table.

| Symbol of isotope | Number of protons | Number of neutrons | Number of electrons | Atomic number | Mass number |
|-------------------------------|-------------------|--------------------|---------------------|---------------|-------------|
| ${}^{35}_{17}\text{Cl}$ | 17 | 18 | 17 | 17 | 35 |
| ${}^{34}_{16}\text{S}$ | 16 | 18 | 16 | 16 | 34 |
| ${}^{209}_{83}\text{Bi}^{3+}$ | 83 | 126 | 80 | 83 | 209 |
| ${}^{115}_{49}\text{In}$ | 49 | 66 | 49 | 49 | 115 |
| ${}^{197}_{79}\text{Au}^{+}$ | 79 | 118 | 78 | 79 | 197 |

CHEMISTRY 151 - ISOTOPE SYMBOLISM KEY

Complete the following table.

| Symbol | Atomic number | Mass number | Number of protons | Number of neutrons | Number of electrons |
|------------------------------|---------------|-------------|-------------------|--------------------|---------------------|
| ${}^{59}_{27}\text{Co}$ | 27 | 59 | 27 | 32 | 27 |
| ${}^{27}_{12}\text{Mg}^{2+}$ | 12 | 27 | 12 | 15 | 10 |
| ${}^{31}_{15}\text{P}^{3-}$ | 15 | 31 | 15 | 16 | 18 |
| ${}^{190}_{76}\text{Os}$ | 76 | 190 | 76 | 114 | 76 |
| ${}^{238}_{92}\text{U}$ | 92 | 238 | 92 | 146 | 92 |
| ${}^{45}_{21}\text{Sc}^{3+}$ | 21 | 45 | 21 | 24 | 18 |

CHEMISTRY 151 - ATOMIC MASSES KEY

Naturally occurring iron consists of 5.82% iron-54 with atoms of mass 53.940 u, 91.66% iron-56 with atoms of mass 55.935 u, 2.19% iron-57 with atoms of mass 56.935 u, and 0.33% iron-58 with atoms of mass 57.933 u. Calculate iron's atomic mass.

$$\begin{aligned} \text{atomic mass} &= 0.0582(53.940) + 0.9166(55.935) + 0.0219(56.935) + 0.0033(57.933) \\ &= 3.14 + 51.27 + 1.25 + 0.19 = \mathbf{55.85 \text{ u}} \end{aligned}$$