$\qquad$

1) Carbon is composed of 6 isotopes. The most common are listed below. Complete the table.


|  | $\mathrm{p}^{+}$ | n | $\mathrm{e}^{-}$ |
| :--- | :--- | :--- | :--- |
| $\mathrm{C}-12$ |  |  |  |
| $\mathrm{C}-13$ |  |  |  |
| $\mathrm{C}-14$ |  |  |  |

b) Which isotopes is most abundant?
2) How many protons \& electrons are in neutral atoms of:

Be $\qquad$ , O $\qquad$ , Cu $\qquad$ , Ne $\qquad$ , K $\qquad$ , Na $\qquad$ , Cf $\qquad$
3) Complete this table:

| Element | At \# | $\mathrm{p}^{+}$ | n | $\mathrm{e}^{-}$ | Symbol | Most common isotope? If <br> not, which is? |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $\mathrm{Ca}-42$ |  |  |  |  |  |  |
| $\mathrm{Ar}-40$ |  |  |  |  |  |  |
| $\mathrm{H}-3$ |  |  |  |  |  |  |
| $\mathrm{Ne}-19$ |  |  |  |  |  |  |

4) Given element $X$, with 73 neutrons and a mass of 123 amu .
a) Complete, $X$ has $\mathrm{p}^{+}=$ $\qquad$ , n= $\qquad$ , $\mathrm{e}^{-}=$ $\qquad$ , Atomic mass = $\qquad$ , At. \# $\qquad$ b) Name the atom $\mathrm{X}=$ $\qquad$
5) Which of these are isotopes?

| Element | $\mathrm{P}^{+}$ | n | $\mathrm{e}^{-}$ | At. Mass | At. \# | Identity |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| X | 17 | 18 |  |  |  |  |
| Y |  |  |  | 32 | 16 |  |
| Z | 16 | 18 |  |  |  |  |

6) Chlorine atoms are made of 2 isotopes, ${ }^{35} \mathrm{Cl}$ is $75.40 \%$ and ${ }^{37} \mathrm{Cl}$ is $24.60 \%$ in abundance. Calculate the average atomic mass for these 2 chlorine isotopes.
7) Complete these atomic diagrams:
a) ${ }_{8}^{16} \mathrm{O}^{-2}=$

$-2$
b) ${ }^{80}{ }_{35} \mathrm{Br}^{-1}=$

8) How many neutrons are in each atom:
a) ${ }_{16}^{32} \mathrm{~S}$
b) ${ }^{80}{ }_{35} \mathrm{Br}$
c) ${ }^{207}{ }_{82} \mathrm{~Pb}$
d) ${ }^{108}{ }_{47} \mathrm{Ag}$
