

Atoms, Molecules, Ions

- ①
- a) F, protons = +1, neutrons = 0
 - b) F, nucleus w/ electrons orbiting
 - c) F, nucleus contains virtually all mass
 - d) T
 - e) F, protons = electrons
 - f) T
 - g) T
 - h) F, has mostly nonmetal properties
 - i) F, alkali group

- ②
- | | |
|---------------|----------------|
| Sn = tin | Mg = magnesium |
| Pt = platinum | K = potassium |
| Hg = mercury | Ag = silver |

- ③
- a) transition metals
 - b) alkaline earth metals
 - c) alkali metals
 - d) noble gases
 - e) halogens

- ④
- | | | | | | | |
|--|--|--|--|--|--|--|
| $\begin{smallmatrix} 24 \\ 13 \end{smallmatrix} \text{Al}$ | $\begin{smallmatrix} 25 \\ 13 \end{smallmatrix} \text{Al}$ | $\begin{smallmatrix} 26 \\ 13 \end{smallmatrix} \text{Al}$ | $\begin{smallmatrix} 27 \\ 13 \end{smallmatrix} \text{Al}$ | $\begin{smallmatrix} 28 \\ 13 \end{smallmatrix} \text{Al}$ | $\begin{smallmatrix} 29 \\ 13 \end{smallmatrix} \text{Al}$ | $\begin{smallmatrix} 30 \\ 13 \end{smallmatrix} \text{Al}$ |
|--|--|--|--|--|--|--|

- 5)
- a) $p = 35$ $n = 79 - 35 = 44$ $e = 35$
 - b) $p = 35$ $n = 81 - 35 = 46$ $e = 35$
 - c) $p = 94$ $n = 239 - 94 = 145$ $e = 94$
 - d) $p = 55$ $n = 133 - 55 = 78$ $e = 55$
 - e) $p = 1$ $n = 3 - 1 = 2$ $e = 1$
 - f) $p = 26$ $n = 56 - 26 = 30$ $e = 26$

- 6)
- a) $p = 56$ $e = 54$ $(+56 - 54 = +2)$
 - b) $p = 30$ $e = 28$ $(+30 - 28 = +2)$
 - c) $p = 7$ $e = 10$ $(+7 - 10 = -3)$
 - d) $p = 37$ $e = 36$ $(+37 - 36 = +1)$
 - e) $p = 27$ $e = 24$ $(+27 - 24 = +3)$
 - f) $p = 52$ $e = 54$ $(+52 - 54 = -2)$
 - g) $p = 35$ $e = 36$ $(+35 - 36 = -1)$

- ⑦
- a) Ra will lose 2 \rightarrow Ra^{2+}
 - b) In will lose 3 \rightarrow In^{3+}
 - c) P will gain 3 \rightarrow P^{3-}
 - d) Te will gain 2 \rightarrow Te^{2-}
 - e) Br will gain 1 \rightarrow Br^-
 - f) Rb will lose 1 \rightarrow Rb^+

In general:

Group 1 = lose 1

2 = lose 2

13 = lose 3

Group 15 = gain 3

16 = gain 2

17 = gain 1