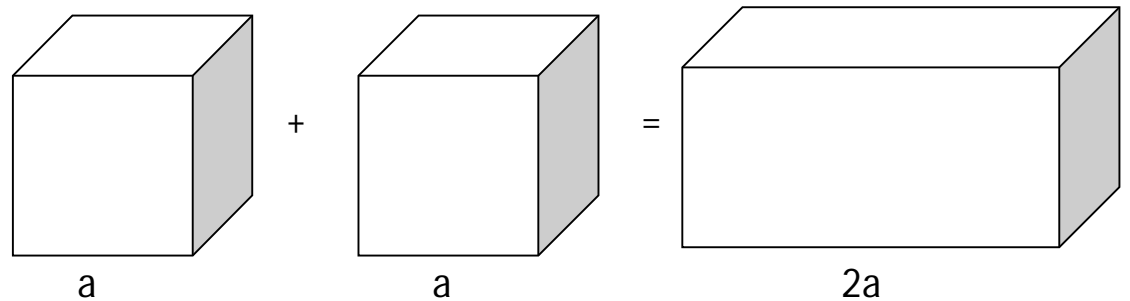
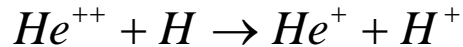


Problems: Chapter Three

- 6- Consider the hypothetical reaction of two "cube-atom" to form a "molybox" as shown in the figure. The interaction between electrons can be neglected. Determine the energy change in the reaction.



- 7- The following reaction might occur in the interior of a star:



Calculate the electronic energy change (in eV). Assume all species to be in their ground states.

- 8- Calculate the root mean square radius ($r_{\text{rms}} = \sqrt{\langle r^2 \rangle}$) of the hydrogen atom in its ground state.
- 9- Calculate the expectation values of the potential and kinetic energies for the 1s state of a hydrogen atom.