Homework for Lecture 3

Consider an atom diffuses in a 3D simple cubic lattice by a random walk mechanism. The atom jumps 10^{-5} times per second at 300K and 10^4 times per second at 600K. Assuming that the vibrational frequency (v) of the atom keeps constant for all the temperatures considered.

1). How many times the atom will jump per second at 900K?

2). How far the atom will move away from its original position at 900 K in 1 minute if the jumping step (i.e., the lattice spacing) is 2 Å.