

Length scales in Nature

Homework 2

Problem 1.

Estimate the number of atoms in a grain of salt. Assume the grain to be a cube 1x1x1 mm, and each atom to be a cubic brick of 1 angstrom. Remember to explain your solution.

Hint: First you can figure out how many atoms you need to line up single file so that the line is 1mm long. Now account for the cube being 3D.

Problem 2.

Estimate the number of cells in your body, if a typical human cell is about 10 micron in size. Remember to explain your solution.

Problem 3 (optional, but fun).

Come up with a way to experimentally measure width of a sheet of paper. Explain your method, perform the measurement using your method and report the results. Please indicate which type of paper did you use (book, printer paper, etc.)