8 **(a)** The results of the α-particle scattering experiment gave evidence for the structure of the atom.

State two results and the associated conclusions.

result 1: ....

....

conclusion 1: ....

....

result 2: ....

....

conclusion 2: ....

....
[4]

(b) In a model of a copper atom of the isotope $^{63}_{29}$Cu, the atom and its nucleus are assumed to be spherical.

The diameter of the nucleus is 2.8×10^{-14} m. The diameter of the atom is 2.3×10^{-10} m.

Calculate the ratio

$$\frac{\text{density of the nucleus}}{\text{density of the atom}}.$$

ratio = ...[3]