

- 8 (a) The results of the  $\alpha$ -particle scattering experiment gave evidence for the structure of the atom.

State two results and the associated conclusions.

result 1: .....

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conclusion 1: .....

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result 2: .....

.....

conclusion 2: .....

.....

[4]

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

The diameter of the nucleus is  $2.8 \times 10^{-14}\text{m}$ . The diameter of the atom is  $2.3 \times 10^{-10}\text{m}$ .

Calculate the ratio

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

ratio = .....[3]