Question 1

A hollow copper sphere contains a total charge of $-3.2\,\mathrm{nC}$. The charge is produced entirely by excess electrons (more than the number of protons in the copper) that are evenly distributed on the sphere.

Approximately how many excess electrons are there on the sphere?

1. 3.2×10^{-9}
2. 3.2×10^{9}
3. 2×10^{-10}
4. 2×10^{10}

Question 2

A $5.0\,\mathrm{m}$ wire has uniformly distributed charge with linear charge density λ.

Which of the following represents the charge in a segment of length $2.0\,\mathrm{m}$?

1. 0.20λ
2. 0.40λ
3. λ
4. 2.0λ
5. 4.0λ
6. 5.0λ

Question 3

A wire with length L has uniformly distributed charge with linear charge density λ_i. The wire is stretched so that the total charge never changes and it always remains uniformly distributed.

Suppose that the wire is stretch to length $4L$. Which of the following is the linear charge density once this has been done?

1. $\lambda_i/4$
2. λ_i
3. $4\lambda_i$