22 Two wires each of length *L* are used to connect an a.c. power supply to a lamp. The a.c power supply has a peak voltage of 12 V and negligible internal resistance.

The r.m.s potential difference across the lamp is 7.00 V. The r.m.s current in the wires is 2.50 A. Each wire is made of a metal of resistivity $1.70 \times 10^{-8}\ \Omega$ m and has a cross-sectional area of $6.00 \times 10^{-7}\ m^2$.

What is the length *L* of each wire?

A 10.5 m **B** 21.0 m **C** 35.3 m **D** 58.8 m