

Solutions

Each answer shows the steps, then the **result**.

2.1

- $R = \frac{V}{I} = \frac{12}{3.0} = 4.0 \, \Omega$

2.2

- it doubles ($R \propto L$)

2.3

- resistivity is a property of the material alone; resistance also depends on the object's length and cross-sectional area

3.1 B

3.2 B

3.3

(a)

- $R = \frac{\rho L}{A} = \frac{(1.7 \times 10^{-8})(2.0)}{1.0 \times 10^{-6}} = 0.034 \, \Omega$

(b)

- length $\times 2$ and area $\div 2$ give $R \times 4 = 0.136 \, \Omega$