Compute the resistance of a 90-cm length of copper wire with a 0.020 -cm2 cross-sectional area. (= 1.8 x 10-6 ohm-cm)

Solution

We use formula of the resistance

$$R = \rho \frac{l}{S},$$

where l - the length of wire, S - its cross-sectional area and ρ – resistivity of material.

For copper wire

$$R = 1.8 \text{ x } 10^{-6} \frac{90}{0.02} = 0.0081 \text{ Ohm} = 8.1 \text{ mOhm}$$

Answer: 8.1 mOhm.