

9 Electricity – Part 1 —Answers

Answers

9.1 $I = Q/t = 45/15 = 3.0 \text{ A}.$

9.2 $R = V/I = 6.0/0.50 = 12 \text{ } \Omega.$

9.3 $P = VI = 230 \times 4.0 = 920 \text{ W}.$

9.4 $P = I^2R = (2.0)^2 \times 5.0 = 20 \text{ W}.$

9.5 $R = \frac{\rho L}{A} = \frac{(1.7 \times 10^{-8})(2.0)}{5.0 \times 10^{-7}} = 6.8 \times 10^{-2} \text{ } \Omega.$

9.6 The thicker wire. A larger cross-sectional area A is divided into $R = \rho L/A$, so a bigger A gives a smaller resistance —the thick wire has the lower resistance.

9.7 $R = \rho L/A$. Doubling L doubles the top; halving A doubles the result again, so the resistance becomes $2 \times 2 = 4$ times as large.