

Advanced Reading Questions: Resistance and Resistivity Experiment

1. Suppose a resistor is measured to conduct 100 mA current when there are 20 volts across it. What is its resistance in  $\Omega$ ?
2. Much of the wire used to wire circuits is # 22 gauge copper wire, which has a diameter of 0.65 mm. The resistivity of copper is  $1.67 \times 10^{-8} \Omega\text{m}$ . Calculate the resistance of this wire per centimeter length. What is the total resistance of a 20 cm length of such wire?
3. Sketch a graph of the exponential function  $i = e^v$ , with  $v$  on the  $x$  axis, and  $i$  on the  $y$  axis. Include both positive and negative  $x$  axis values. Be sure to label any numerical values of the function where it crosses an axis.