

NAME _____

DATE _____

Scenario

You are given a piece of malleable, clay-like material that is electrically conductive. You are also given a meterstick, a stopwatch, an electronic balance, a voltmeter, an ammeter, several batteries in special holders that can be connected together, a power supply with a knob that can vary its emf, and many connecting wires.

Design an Experiment

PART A: You are first tasked with finding the resistivity of this material.

- i. In the space below, outline a procedure that could be followed to make measurements that would allow you to determine the resistivity of the material. Give each measurement an algebraic symbol. Include a labeled diagram and be sure to explain what equipment is to be used to make each measurement.

What Needs to Be Measured and Algebraic Symbols	Procedure:
Labeled Diagram of the Setup	

- ii. Using your algebraic symbols defined in Part A (i), derive an equation for the resistivity in terms of measured quantities.

PART B: You are next asked next to determine whether the material is ohmic, meaning that its resistance remains the same even as the current through and potential difference across the material changes.

- i. How, if at all, does your experimental setup from Part A (i) need to be modified?

- ii. Briefly explain a procedure that would allow you to make measurements to determine whether the material is ohmic.

Analyze Data

PART C: How would you represent your data to show whether the material is ohmic? What feature of the representation would indicate that the material is ohmic?
