12 A student performs an experiment to determine the relationships among voltage, current, and resistance. The student's procedure includes the following steps:

- Connect a 3.0 V battery to a 42 Ω resistor.
- Measure the current using an ammeter and record the value.
- Replace the 42 Ω resistor with a 54 Ω resistor, and then with a 66 Ω resistor, measuring and recording the current for each resistor.

The table below shows the data collected.

Student's Data

Resistance (Ω)	Current (A)
42	0.071
54	0.056
66	0.045

a. In your Student Answer Booklet, draw a schematic diagram of the student's original circuit with the 42 Ω resistor. Be sure to label the battery and the resistor.

b. Describe in words the relationship between current and resistance as voltage is held constant.

The student will investigate these relationships further using a different experiment.

c. Write a procedure the student could use to test the relationships among voltage, current, and resistance if the only materials available for use are three 3.0 V batteries, one 30 Ω resistor, wire, and an ammeter.

d. In your Student Answer Booklet, make a data table similar to the Student's Data table above to show the expected current measurements for your procedure from part (c). Show your calculations and include units in your answer.