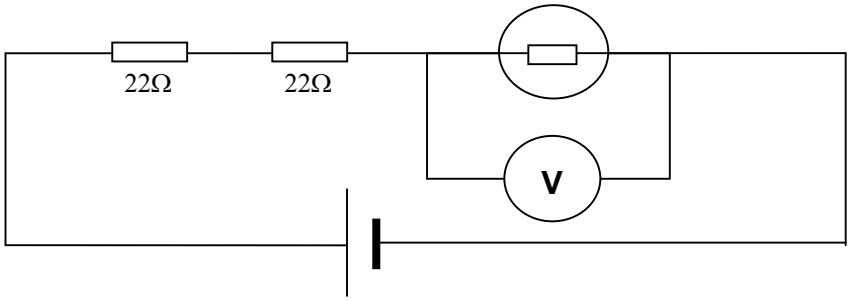
Investigation
COLLECTING DATA FROM A POPULATION OF LIGHT BULBS

Most things show variation even if they are of the same type. Humans vary in height and weight, manufactured articles vary in their characteristics. In this example we shall take a sample from a population of light bulbs to find out how much they vary. It should then be possible to see if this variation is great or small.

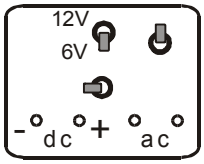
Materials

TI Graphing Calculator with DataMate program installed
CBL2 interface
Voltage probe
15 light bulbs (3.5v)
3 cables and 3 crocodile clips
light bulb socket
2 resistors (22Ω)
6 volt power supply

Set up the following electric circuit using the Calculator, CBL2 and voltage probes as a voltmeter.



Do not forget to set the low voltage supply unit to 6 volts D.C.



Starting the DataMate Program and setting up

1. Plug the Voltage Probe into channel **CH 1** on the CBL2 interface.

2. Start the DataMate program. Press **CLEAR** to reset the program. DataMate will detect the auto-ID sensor, set the data collection parameters, and display the current sensor reading.

3. Press **1: SETUP** and using the cursor buttons, or select **MODE** press **ENTER**.

4. In the **SELECT MODE** menu choose **5: SELECTED EVENTS**.

5. Press **1: OK** to return to the main screen.

Collecting data

1. Select 15 light bulbs at random. Screw the first light bulb into the socket.

2. Select **2: START** to begin data collection. Press **ENTER** to record your first measurement.

3. Change the light bulb and press **ENTER**. to record your second measurement

4. Continue until you have recorded the voltage across all 15 bulbs. Make sure you do not measure the same bulb twice.

5. Stop data collection by pressing the **STO➔** key.

6. Save your data in the usual way (**5: TOOLS** then **1: STORE LATEST DATA RUN**)

7. To view the data quit Datamate and press **STAT** then **1: EDIT**. The list of voltages will be in **L2** (and a copy in **L3**). Rename the file and then save it in archive. Now it can be analysed statistically.