

- 1** A student doing a science project wired two identical resistors in parallel into a circuit. The manufacturer specifications for each resistor are resistance $R_0 = 390\ \Omega$ with a percentage uncertainty of 5%.

(a) Calculate the effective resistance of the two resistors in parallel.

$$R = \dots\dots\dots\ \Omega \quad [1]$$

(b) Calculate the absolute uncertainty ΔR in the effective resistance of the two resistors in parallel.

$$\Delta R = \dots\dots\dots\ \Omega \quad [2]$$

(c) To verify the effective resistance is as calculated from manufacturer specifications, the student sets up the following circuit as shown in Fig. 1.1.

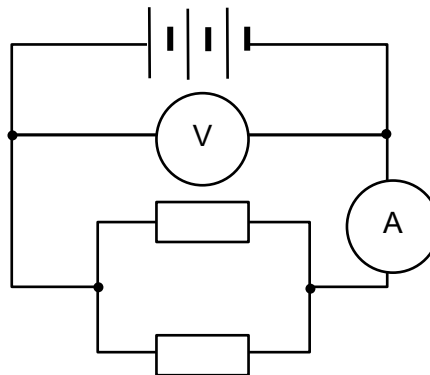


Fig. 1.1

The meter readings are as follows:

Voltmeter: $V = 6.02 \pm 0.01$ V
Ammeter: $I = 0.031 \pm 0.001$ A

Calculate the absolute uncertainty ΔR_m of the effective resistance based on the meter readings.

absolute uncertainty $\Delta R_m =$ Ω [3]