4 An experiment is carried out to measure the resistance of a wire.

The current in the wire is $(1.0 \pm 0.2)\,\text{A}$ and the potential difference across the wire is $(8.0 \pm 0.4)\,\text{V}$.

What is the resistance of the wire and its uncertainty?

A $(8.0 \pm 0.2)\,\Omega$

B $(8.0 \pm 0.6)\,\Omega$

C $(8 \pm 1)\,\Omega$

D $(8 \pm 2)\,\Omega$

5 The Young modulus of the material of a wire is to be found. The Young modulus E is given by the equation below.

$$E = \frac{4Fl}{\pi d^2 x}$$

The wire is extended by a known force and the following measurements are made.

Which measurement has the largest effect on the uncertainty in the value of the calculated Young modulus?

	measurement	symbol	value
A	length of wire before force applied	l	$2.043 \pm 0.002\,\text{m}$
B	diameter of wire	d	$0.54 \pm 0.02\,\text{mm}$
C	force applied	F	$19.62 \pm 0.01\,\text{N}$
D	extension of wire with force applied	x	$5.2 \pm 0.2\,\text{mm}$

Space for working