

- 1 The volume V of liquid flowing in time t through a pipe of radius r is given by the equation

$$\frac{V}{t} = \frac{\pi P r^4}{8 C l}$$

where P is the pressure difference between the ends of the pipe of length l , and C depends on the frictional effects of the liquid.

An experiment is performed to determine C . The measurements made are shown in Fig. 1.1.

$\frac{V}{t} / 10^{-6} \text{ m}^3 \text{ s}^{-1}$	$P / 10^3 \text{ N m}^{-2}$	r / mm	l / m
1.20 ± 0.01	2.50 ± 0.05	0.75 ± 0.01	0.250 ± 0.001

Fig. 1.1

- (a) Calculate the value of C .

$$C = \dots\dots\dots \text{ N s m}^{-2} \text{ [2]}$$

- (b) Calculate the uncertainty in C .

$$\text{uncertainty} = \dots\dots\dots \text{ N s m}^{-2} \text{ [3]}$$

- (c) State the value of C and its uncertainty to the appropriate number of significant figures.

$$C = \dots\dots\dots \pm \dots\dots\dots \text{ N s m}^{-2} \text{ [1]}$$