



5 A - Powers in Headings

2 A student investigates an electrical circuit.

The circuit is set up as shown in Fig. 2.1.

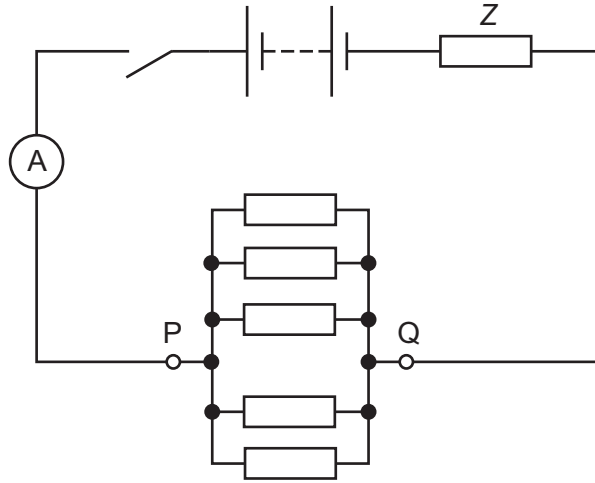


Fig. 2.1

A battery of negligible internal resistance is connected to a resistor of resistance Z . Five resistors, each of resistance R , are connected in parallel between P and Q.

The switch is closed. The total current I in the circuit is measured using the ammeter.

The experiment is then repeated by changing the number n of resistors, each of resistance R , connected in parallel between P and Q.

It is suggested that I and n are related by the equation

$$E = I\left(\frac{R}{n} + Z\right)$$

where E is the electromotive force (e.m.f.) of the battery.

(a) A graph is plotted of $\frac{1}{I}$ on the y-axis against $\frac{1}{n}$ on the x-axis.

Determine expressions for the gradient and y-intercept.

gradient =

y-intercept =

[1]



DO NOT WRITE IN THIS MARGIN



(b) Values of n , $\frac{1}{n}$ and I are given in Table 2.1.

Table 2.1

n	$\frac{1}{n}$	$I/\mu\text{A}$	$\frac{1}{I}/10^3\text{A}^{-1}$
5	0.200	455 ± 5	
6	0.167	525 ± 5	
7	0.143	580 ± 5	
8	0.125	635 ± 5	
9	0.111	685 ± 5	
11	0.0909	765 ± 5	

Calculate and record values of $\frac{1}{I}/10^3\text{A}^{-1}$ in Table 2.1. Include the absolute uncertainties in $\frac{1}{I}$. [2]

- (c) (i) Plot a graph of $\frac{1}{I}/10^3\text{A}^{-1}$ against $\frac{1}{n}$. Include error bars for $\frac{1}{I}$. [2]
- (ii) Draw the straight line of best fit and a worst acceptable straight line on your graph. Label both lines. [2]
- (iii) Determine the gradient of the line of best fit. Include the absolute uncertainty in your answer.

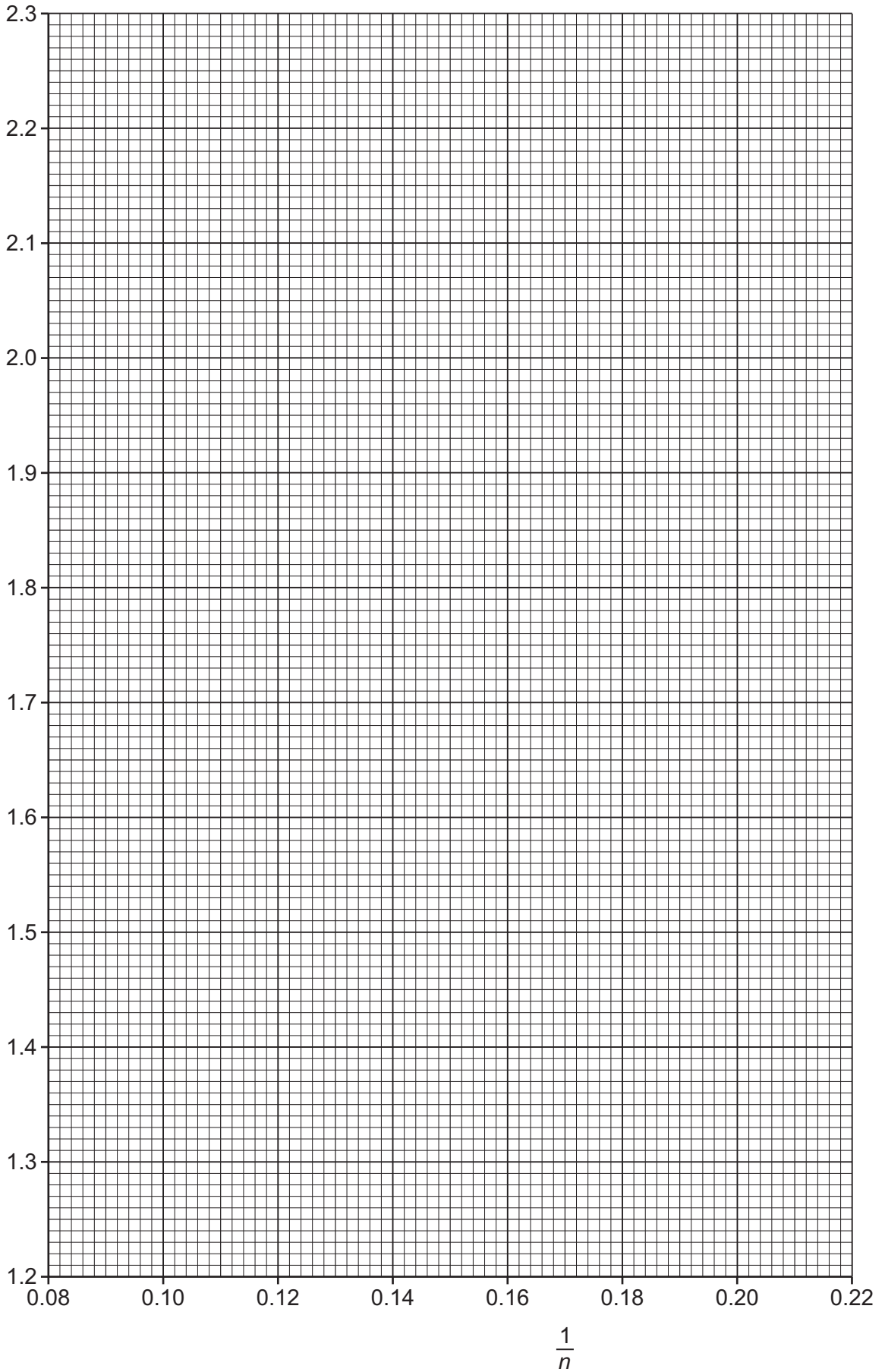
gradient = [2]





DO NOT WRITE IN THIS MARGIN

$$\frac{1}{I} / 10^3 \text{A}^{-1}$$





(iv) Determine the y -intercept of the line of best fit. Include the absolute uncertainty in your answer.

y -intercept = [2]

(d) The e.m.f. E of the battery is determined twice during the experiment. The values obtained are 5.6 V and 6.0 V.

(i) Using your answers to (a), (c)(iii) and (c)(iv), determine the values of R and Z . Include appropriate units.

R =

Z =

[2]

(ii) Determine the percentage uncertainty in your value of R .

percentage uncertainty = % [1]

(e) The experiment is repeated with 20 resistors, each of resistance R , connected in parallel between P and Q. Determine the total current I in the circuit.

I = A [1]

[Total: 15]



A - Powers in headings

- 2 A student is investigating monochromatic light passing through a diffraction grating. A series of maxima are produced on a screen, as shown in Fig. 2.1.

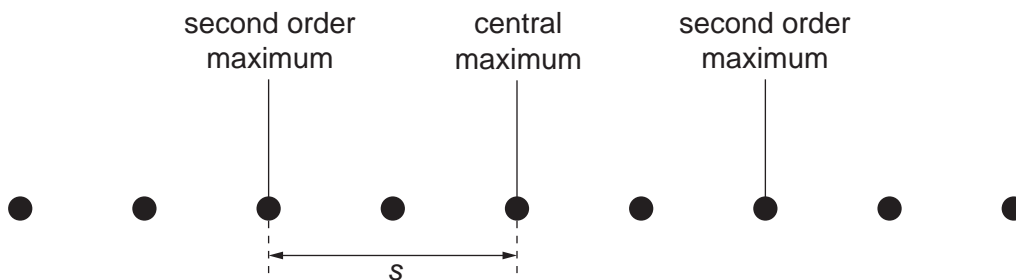


Fig. 2.1

The student measures the distance s between the central maximum and the second order maximum on the screen.

The experiment is repeated for different wavelengths of light.

It is suggested that s and the wavelength λ are related by the equation

$$\frac{s^2}{s^2 + D^2} = 4N^2\lambda^2$$

where D is the distance between the diffraction grating and the screen and N is the number of lines per unit length of the diffraction grating.

- (a) A graph is plotted of $\frac{1}{s^2}$ on the y -axis against $\frac{1}{\lambda^2}$ on the x -axis.

Determine expressions for the gradient and y -intercept.

gradient =

y -intercept =

[1]

(b) Values of λ and s are given in Fig. 2.2.

$\lambda/10^{-7}\text{m}$	s/m	$\frac{1}{\lambda^2}/10^{12}\text{m}^{-2}$	$\frac{1}{s^2}/\text{m}^{-2}$
4.3	0.62 ± 0.02		
4.8	0.72 ± 0.02		
5.3	0.82 ± 0.02		
5.8	0.92 ± 0.02		
6.2	1.02 ± 0.02		
6.6	1.10 ± 0.02		

Fig. 2.2

Calculate and record values of $\frac{1}{\lambda^2}/10^{12}\text{m}^{-2}$ and $\frac{1}{s^2}/\text{m}^{-2}$ in Fig. 2.2.

Include the absolute uncertainties in $\frac{1}{s^2}$. [2]

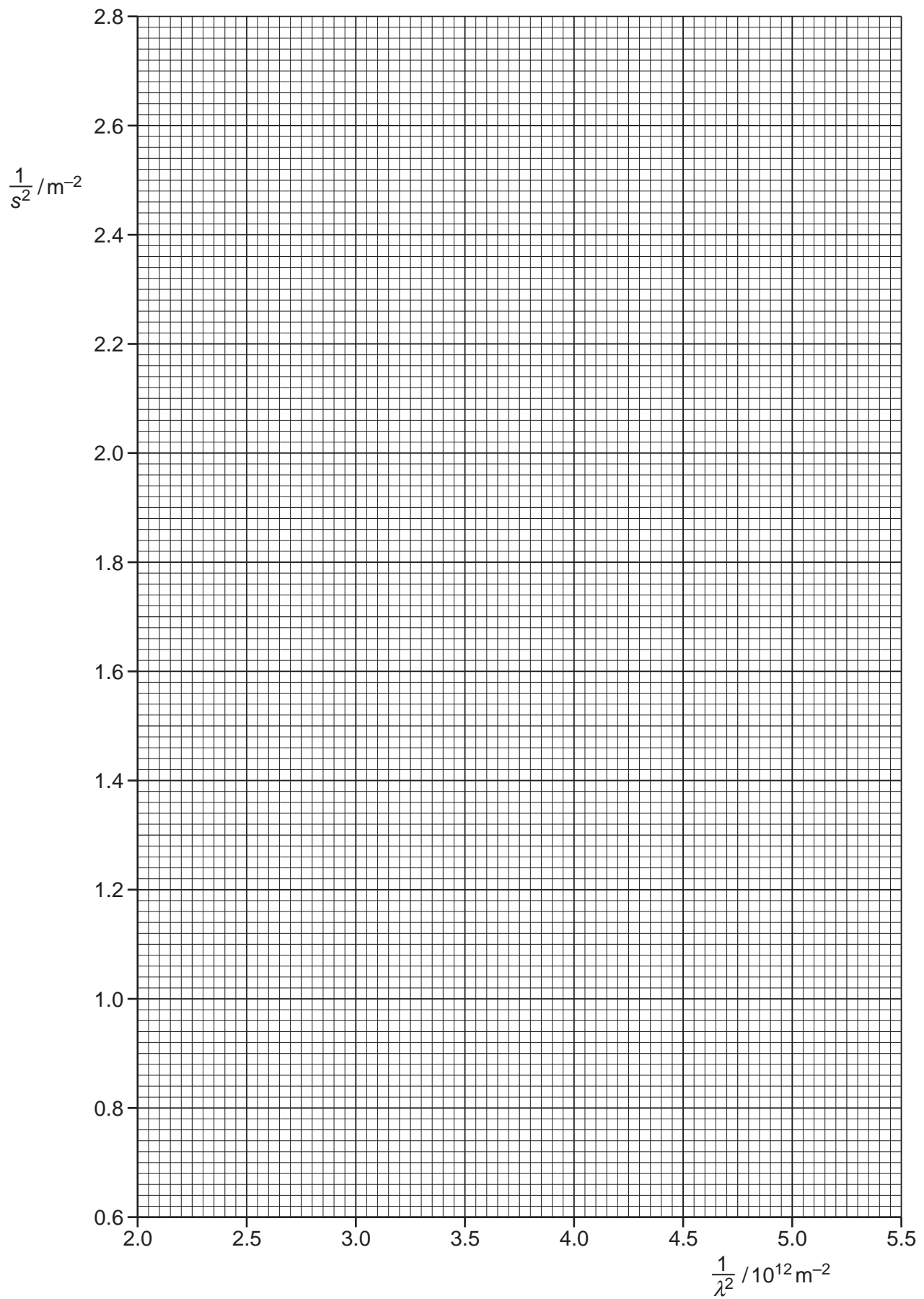
(c) (i) Plot a graph of $\frac{1}{s^2}/\text{m}^{-2}$ against $\frac{1}{\lambda^2}/10^{12}\text{m}^{-2}$.

Include error bars for $\frac{1}{s^2}$. [2]

(ii) Draw the straight line of best fit and a worst acceptable straight line on your graph. Both lines should be clearly labelled. [2]

(iii) Determine the gradient of the line of best fit. Include the absolute uncertainty in your answer.

gradient = [2]



8

- (iv) Determine the y -intercept of the line of best fit. Include the absolute uncertainty in your answer.

y -intercept = [2]

- (d) (i) Using your answers to (a), (c)(iii) and (c)(iv), determine the values of D and N . Include appropriate units.

D =

N =

[3]

- (ii) Determine the percentage uncertainty in N .

percentage uncertainty in N = % [1]

[Total: 15]

A - Powers in headings

5

- 2 A student is investigating the electric potential near a charged metal sphere. The sphere is suspended from the ceiling as shown in Fig. 2.1.

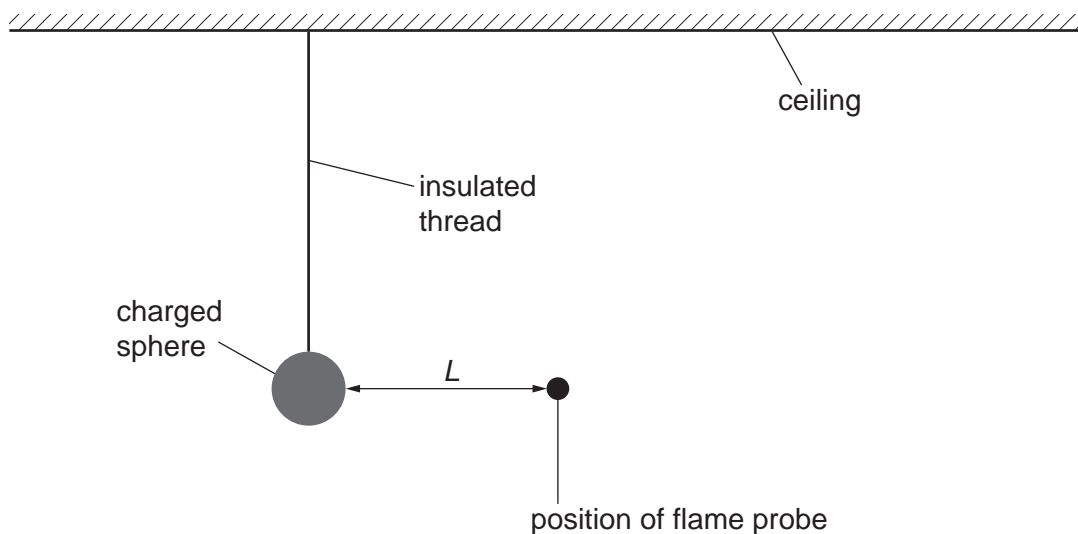


Fig. 2.1

A flame probe is used to measure the potential V at a distance L from the surface of the sphere. The experiment is repeated for different distances from the sphere.

It is suggested that V and L are related by the equation

$$V = \frac{Q}{4\pi\epsilon_0(L + a)}$$

where Q is the charge on the sphere, a is the radius of the sphere and ϵ_0 is the permittivity of free space.

- (a) A graph is plotted of $\frac{1}{V}$ on the y -axis against L on the x -axis.

Determine expressions for the gradient and the y -intercept.

gradient =

y -intercept =

[1]

(b) Values of L and V are given in Fig. 2.2.

L/m	V/kV	$\frac{1}{V}/10^{-3}V^{-1}$
0.018	1.25 ± 0.05	
0.036	1.05 ± 0.05	
0.053	0.90 ± 0.03	
0.068	0.80 ± 0.03	
0.089	0.70 ± 0.02	
0.113	0.60 ± 0.02	

Fig. 2.2

Calculate and record values of $\frac{1}{V}/10^{-3}V^{-1}$ in Fig. 2.2.

Include the absolute uncertainties in $\frac{1}{V}$. [2]

(c) (i) Plot a graph of $\frac{1}{V}/10^{-3}V^{-1}$ against L/m .

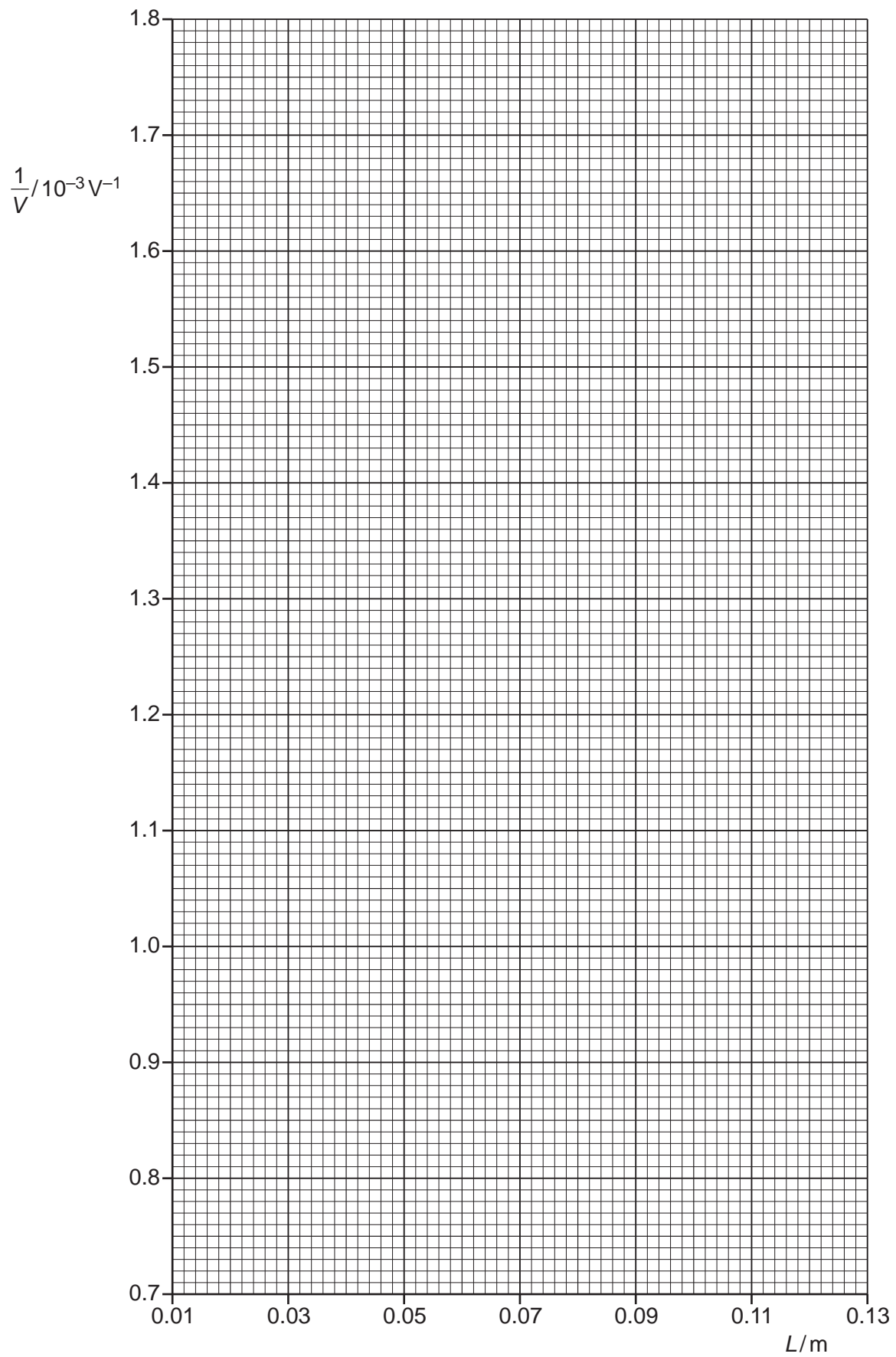
Include error bars for $\frac{1}{V}$. [2]

(ii) Draw the straight line of best fit and a worst acceptable straight line on your graph. Both lines should be clearly labelled. [2]

(iii) Determine the gradient of the line of best fit. Include the absolute uncertainty in your answer.

gradient = [2]

7



- (iv) Determine the y -intercept of the line of best fit. Include the absolute uncertainty in your answer.

y -intercept = [2]

- (d) (i) Using your answers to (a), (c)(iii) and (c)(iv), determine the values of a and Q . Include an appropriate unit for Q .

Data: $\epsilon_0 = 8.85 \times 10^{-12} \text{ F m}^{-1}$.

$a = \dots\dots\dots \text{ m}$

$Q = \dots\dots\dots$
[3]

- (ii) Determine the percentage uncertainty in a .

percentage uncertainty in $a = \dots\dots\dots \%$ [1]

[Total: 15]



- 2 A student investigates the refraction of white light entering a transparent rectangular block. A narrow beam of light enters the block at the midpoint of one of the shorter sides. The angle of incidence θ is measured, as shown in Fig. 2.1.

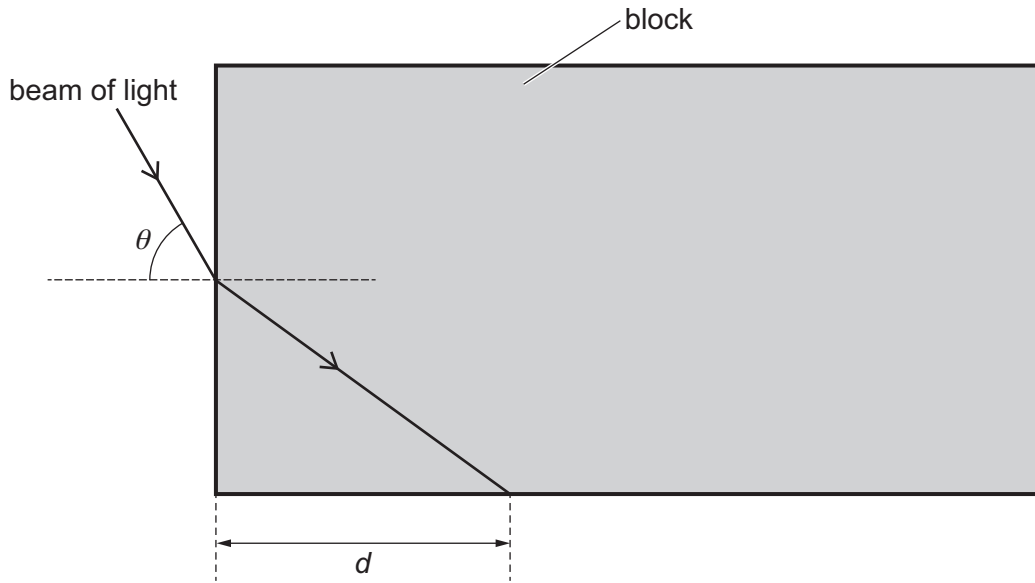


Fig. 2.1 (not to scale)

The distance d between the corner of the block and the point where the beam of light touches the boundary of the block is measured.

The experiment is repeated for different values of θ .

It is suggested that d and θ are related by the equation

$$\frac{B}{B + d^2} = \frac{\sin^2 \theta}{n^2}$$

where B and n are constants.

- (a) A graph is plotted of d^2 on the y -axis against $\frac{1}{\sin^2 \theta}$ on the x -axis.

Determine expressions for the gradient and y -intercept.

gradient =

y -intercept =

[1]



DO NOT WRITE IN THIS MARGIN



- (b) Values of θ , $\frac{1}{\sin^2 \theta}$ and d are given in Table 2.1.

Table 2.1

$\theta / ^\circ$	$\frac{1}{\sin^2 \theta}$	d / cm	d^2 / cm^2
28.5	4.39	24.8 ± 0.2	
33.5	3.28	21.4 ± 0.2	
42.5	2.19	17.1 ± 0.2	
50.0	1.70	14.7 ± 0.2	
57.5	1.41	12.9 ± 0.2	
63.5	1.25	11.8 ± 0.2	

Calculate and record values of d^2 / cm^2 in Table 2.1.

Include the absolute uncertainties in d^2 .

[2]

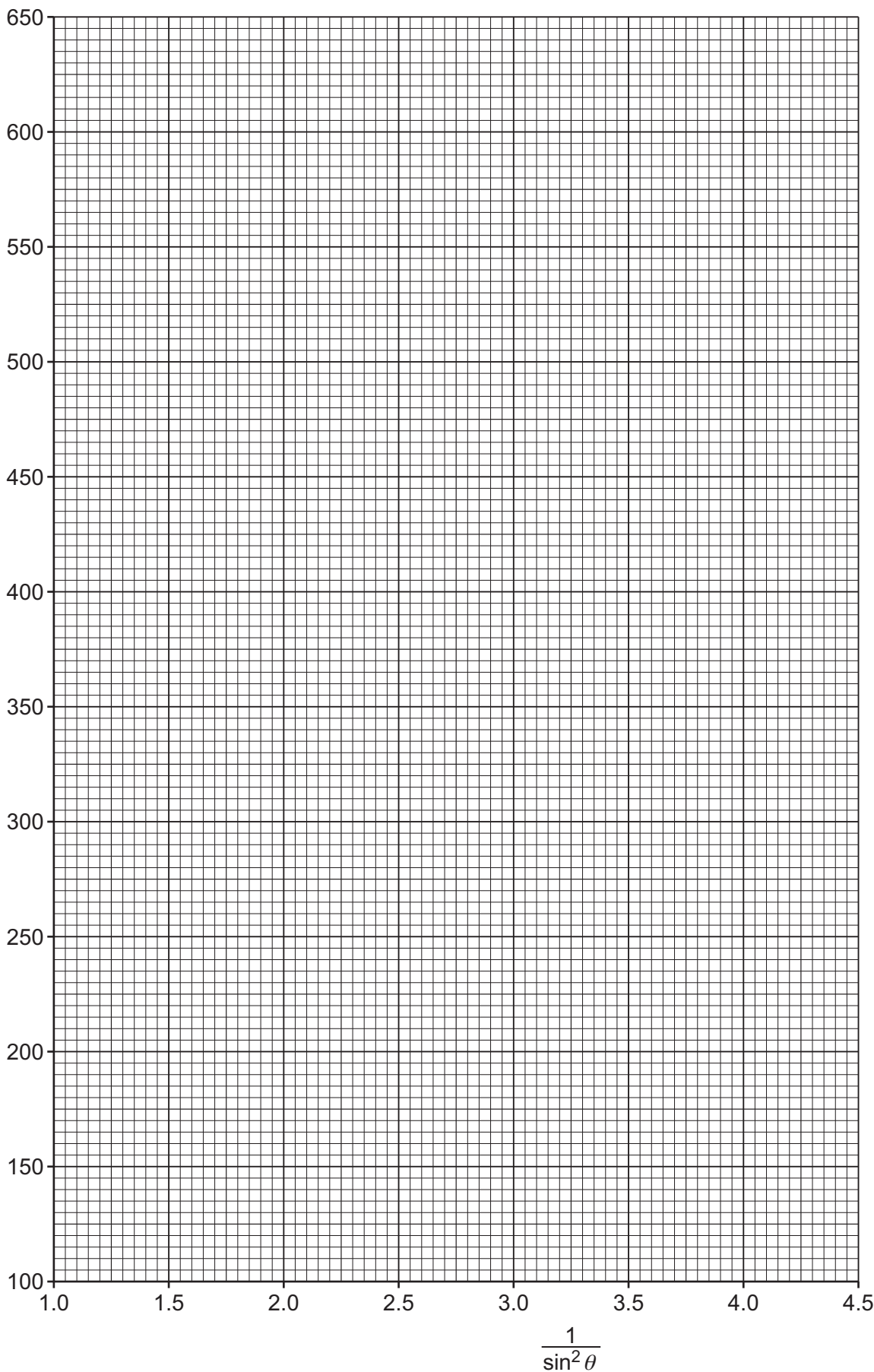
- (c) (i) Plot a graph of d^2 / cm^2 against $\frac{1}{\sin^2 \theta}$. Include error bars for d^2 . [2]
- (ii) Draw the straight line of best fit and a worst acceptable straight line on your graph. Label both lines. [2]
- (iii) Determine the gradient of the line of best fit. Include the absolute uncertainty in your answer.

gradient = [2]





d^2/cm^2





(iv) Determine the y -intercept of the line of best fit. Include the absolute uncertainty in your answer.

y -intercept = [2]

(d) (i) Using your answers to (a), (c)(iii) and (c)(iv), determine the values of B and n . Include appropriate units.

B =

n = [2]

(ii) Determine the percentage uncertainty in n .

percentage uncertainty in n = % [1]

(e) The experiment is repeated. Determine the angle θ that gives a value of d of 30.0 cm.

θ = ° [1]

[Total: 15]



B - Prefixes

2 A student investigates light from different galaxies.

Fig. 2.1 shows the lines in the absorption spectrum from a distant galaxy.

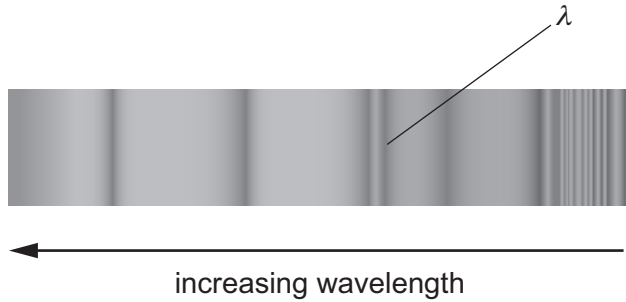


Fig. 2.1

The wavelength of one of the lines in the absorption spectrum is λ . The wavelength of this spectral line in the laboratory is λ_0 .

The observations of the same spectral line are repeated for different galaxies.

The student determines the distance d of each galaxy from the Earth.

It is suggested that λ and d are related by the equation

$$\frac{\lambda - \lambda_0}{\lambda_0} = \frac{Hd}{c}$$

where c is the speed of light in free space and H is the Hubble constant.

(a) A graph is plotted of λ on the y -axis against $\frac{d}{c}$ on the x -axis.

Determine expressions for the gradient and y -intercept.

gradient =

y -intercept =

[1]



DO NOT WRITE IN THIS MARGIN



(b) Values of d and λ are given in Table 2.1.

Table 2.1

$d/10^{21}$ km	$\frac{d}{c}/10^{15}$ s	λ/nm
0.48 ± 0.12		658.4
1.04 ± 0.12		661.2
1.45 ± 0.12		664.2
1.80 ± 0.12		665.7
2.85 ± 0.12		672.4
3.75 ± 0.12		678.2

The value of c is $3.00 \times 10^5 \text{ km s}^{-1}$.

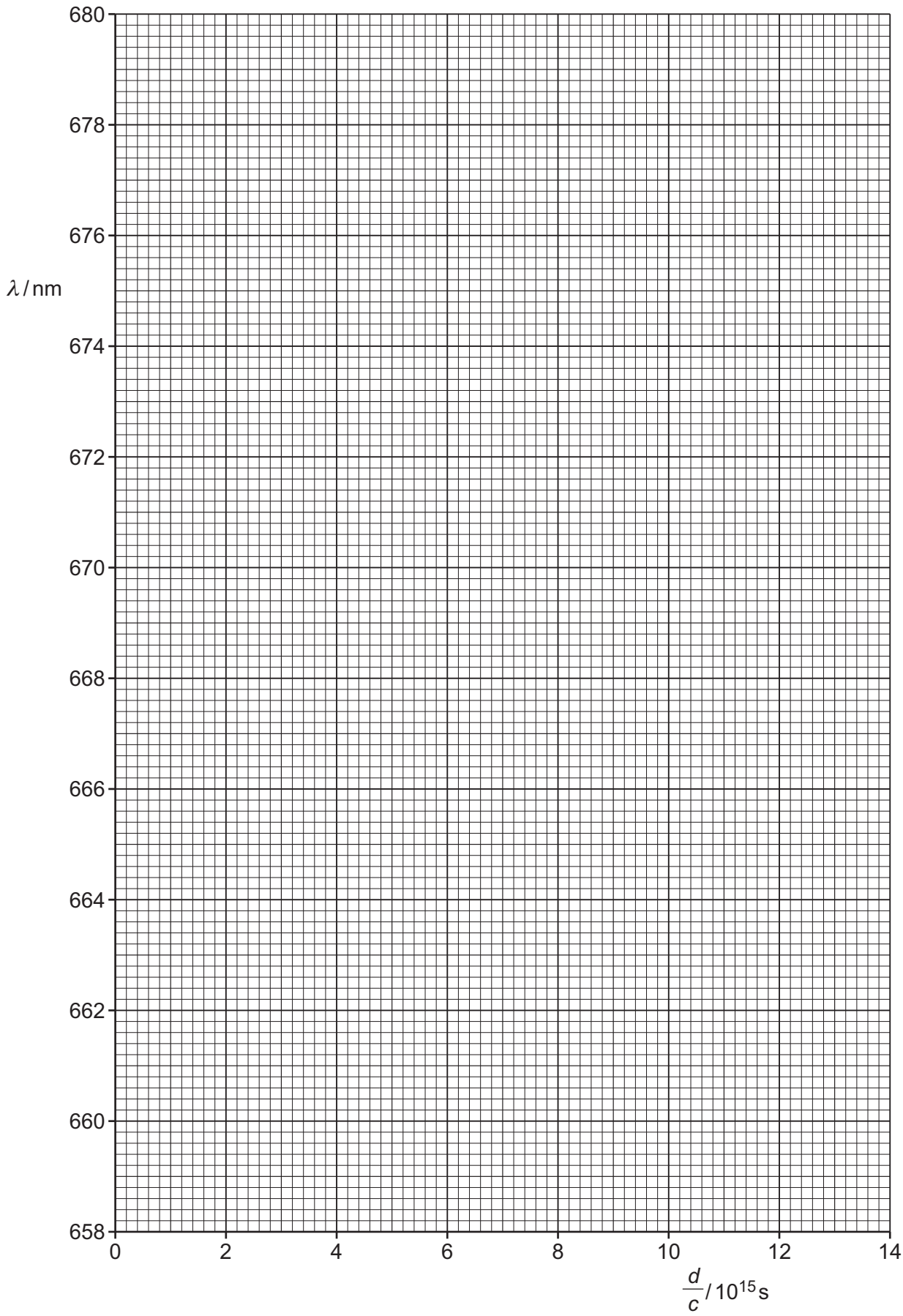
Calculate and record values of $\frac{d}{c}/10^{15}$ s in Table 2.1. Include the absolute uncertainties in $\frac{d}{c}$. [2]

- (c) (i) Plot a graph of λ/nm against $\frac{d}{c}/10^{15}$ s. Include error bars for $\frac{d}{c}$. [2]
- (ii) Draw the straight line of best fit and a worst acceptable straight line on your graph. Label both lines. [2]
- (iii) Determine the gradient of the line of best fit. Include the absolute uncertainty in your answer.

gradient = [2]



DO NOT WRITE IN THIS MARGIN





(iv) Determine the y -intercept of the line of best fit. Include the absolute uncertainty in your answer.

y -intercept = [2]

(d) Using your answers to (a), (c)(iii) and (c)(iv), determine the values of λ_0 and H . Include appropriate units.

λ_0 =

H = [2]

(e) Hubble's law suggests that the age T of the universe is related to H by

$$T = \frac{1}{H}.$$

Determine a value for T . Include the absolute uncertainty in your answer.

T = s [2]

[Total: 15]



C - Powers in Logs

- 2 A student investigates how the viscous force in a liquid varies with temperature.

The student releases a ball from the surface of the liquid in a container. The ball falls as shown in Fig. 2.1.

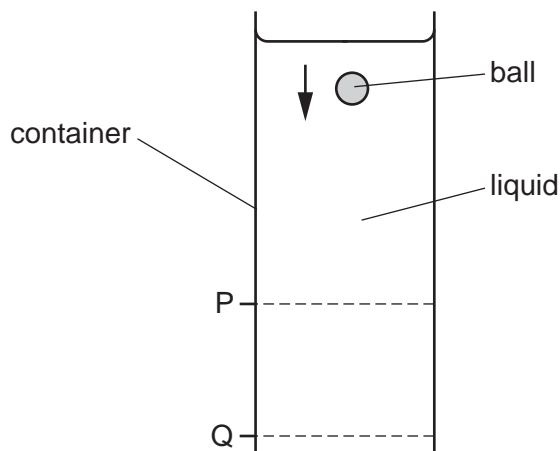


Fig. 2.1

The student determines the speed of the ball between P and Q and measures the thermodynamic temperature T of the liquid.

Viscosity is a term used to describe the viscous forces acting in a liquid. Viscosity has the unit pascal second (Pa s). The viscosity η of the liquid is calculated from the speed of the ball.

The experiment is repeated for the same liquid at different temperatures.

It is suggested that η and T are related by the equation

$$\eta = He^{\left(\frac{E}{kT}\right)}$$

where E and H are constants and k is the Boltzmann constant.

- (a) A graph is plotted of $\ln \eta$ on the y -axis against $\frac{1}{T}$ on the x -axis.

Determine expressions for the gradient and y -intercept.

gradient =

y -intercept =

[1]

(b) Values of T and η are given in Table 2.1.

Table 2.1

T/K	$\eta/10^{-4}\text{Pas}$	$\frac{1}{T}/10^{-3}\text{K}^{-1}$	$\ln(\eta/10^{-4}\text{Pas})$
292	12.3 ± 0.2	3.42	
303	9.8 ± 0.2	3.30	
311	8.4 ± 0.2	3.22	
323	6.8 ± 0.2	3.10	
335	5.6 ± 0.2	2.99	
346	4.8 ± 0.2	2.89	

Calculate and record values of $\ln(\eta/10^{-4}\text{Pas})$ in Table 2.1.

Include the absolute uncertainties in $\ln(\eta/10^{-4}\text{Pas})$.

[2]

(c) (i) Plot a graph of $\ln(\eta/10^{-4}\text{Pas})$ against $\frac{1}{T}/10^{-3}\text{K}^{-1}$.
Include error bars for $\ln \eta$.

[2]

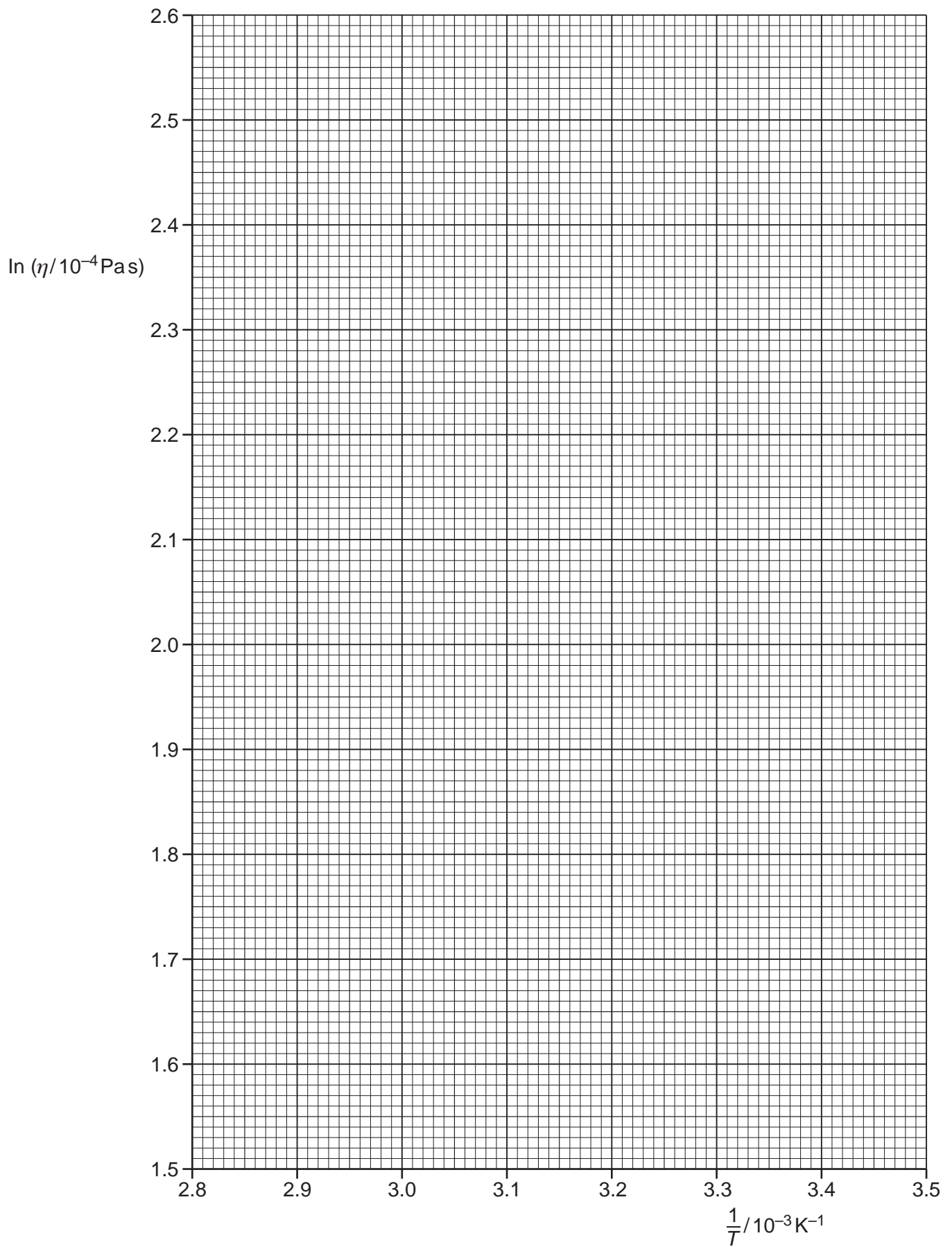
(ii) Draw the straight line of best fit and a worst acceptable straight line on your graph. Both lines should be clearly labelled.

[2]

(iii) Determine the gradient of the line of best fit. Include the absolute uncertainty in your answer.

gradient = [2]

7



8

- (iv) Determine the y -intercept of the line of best fit. Do **not** include the absolute uncertainty in your answer.

y -intercept = [1]

- (d) (i) Using your answers to (a), (c)(iii) and (c)(iv), determine values of E and H . Include appropriate units.

Data: $k = 1.38 \times 10^{-23} \text{ JK}^{-1}$

$E = \dots\dots\dots$

$H = \dots\dots\dots$ [3]

- (ii) Determine the absolute uncertainty in E .

absolute uncertainty in $E = \dots\dots\dots$ [1]

- (e) Determine the value of η for a temperature of 273 K.

$\eta = \dots\dots\dots$ Pas [1]

[Total: 15]

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.

C - Powers in Logs

2 A student observes the orbits of some of the moons around the planet Saturn, as shown in Fig. 2.1.

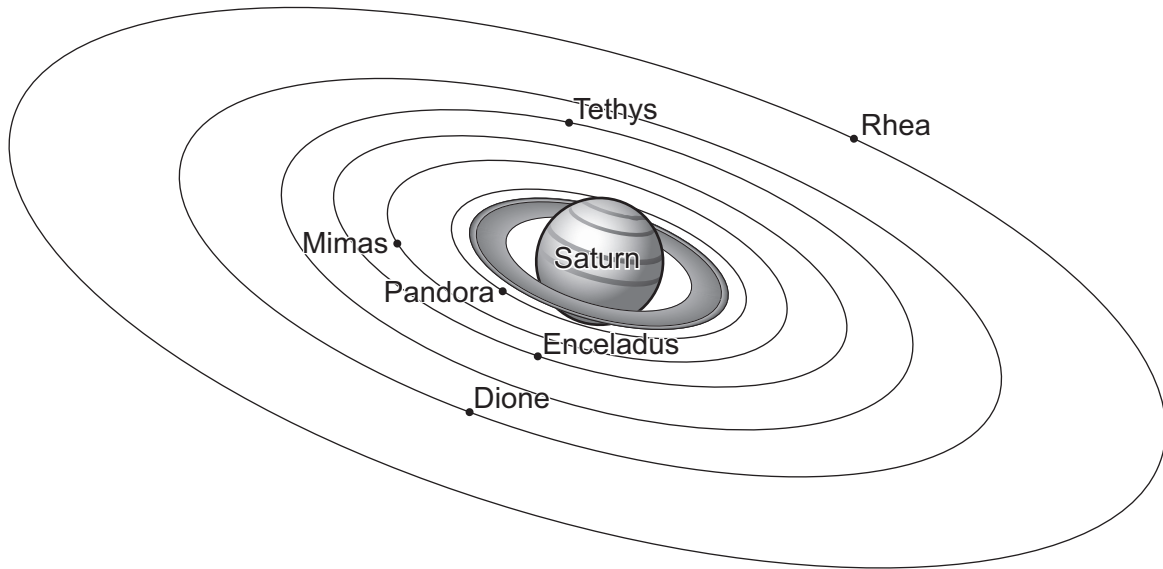


Fig. 2.1 (not to scale)

For the moon Pandora, the period of the orbit and the mean distance from the centre of Saturn are determined.

The measurements of period T and mean distance r are repeated for other moons.

It is suggested that T and r are related by the equation

$$T = \frac{2\pi r^n}{k}$$

where n and k are constants.

(a) A graph is plotted of $\lg T$ on the y -axis against $\lg r$ on the x -axis.

Determine expressions for the gradient and y -intercept.

gradient =

y -intercept =

[1]



DO NOT WRITE IN THIS MARGIN

(b) Values of r and T are given for different moons in Table 2.1.

Table 2.1

moon	$r/10^8\text{m}$	$T/10^3\text{s}$	$\lg(r/10^8\text{m})$	$\lg(T/10^3\text{s})$
Pandora	1.42	52 ± 5		
Mimas	1.86	81 ± 5		
Enceladus	2.38	120 ± 10		
Tethys	2.95	170 ± 10		
Dione	3.77	240 ± 20		
Rhea	5.28	390 ± 30		

Calculate and record values of $\lg(r/10^8\text{m})$ and $\lg(T/10^3\text{s})$ in Table 2.1. Include the absolute uncertainties in $\lg(T/10^3\text{s})$. [2]

- (c) (i) Plot a graph of $\lg(T/10^3\text{s})$ against $\lg(r/10^8\text{m})$. Include error bars for $\lg(T/10^3\text{s})$. [2]
- (ii) Draw the straight line of best fit and a worst acceptable straight line on your graph. Label both lines. [2]
- (iii) Determine the gradient of the line of best fit. Include the absolute uncertainty in your answer.

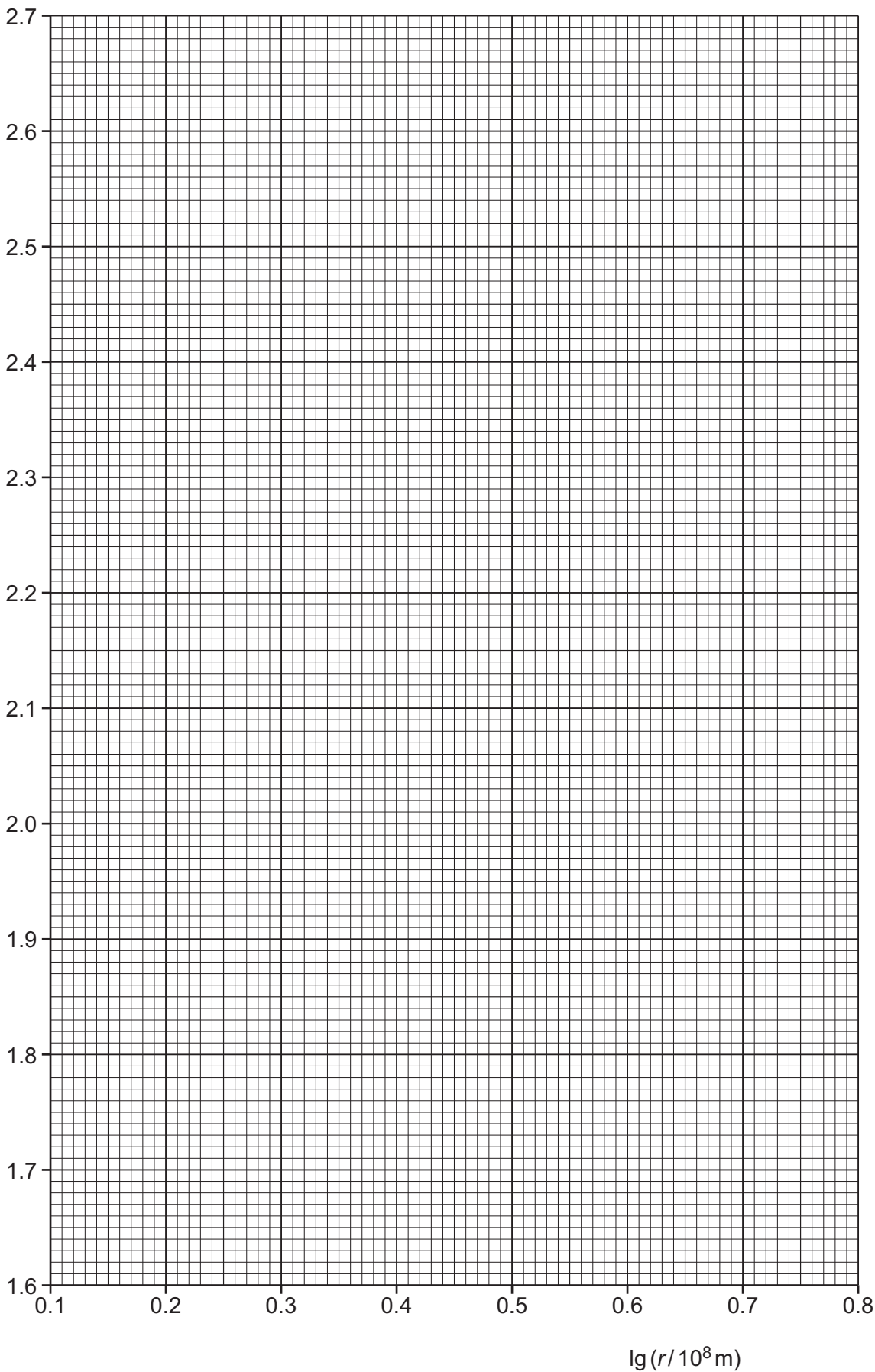
gradient = [2]



DO NOT WRITE IN THIS MARGIN



$\lg(T/10^3\text{s})$





(iv) Determine the y -intercept of the line of best fit. Include the absolute uncertainty in your answer.

y -intercept = [2]

(d) Using your answers to (a), (c)(iii) and (c)(iv), determine the values of n and k . Include the absolute uncertainties in n and k . You need not be concerned with units.

n =

k =

[3]

(e) Titan is another moon of Saturn. The orbit of Titan has a period of 1.38×10^6 s.

Determine the value of r for Titan.

r = m [1]

[Total: 15]



C - Powers in Logs

- 2 The brightness of some stars varies regularly. These stars are called variable stars.

Fig. 2.1 shows the variation of luminosity with time for a variable star.

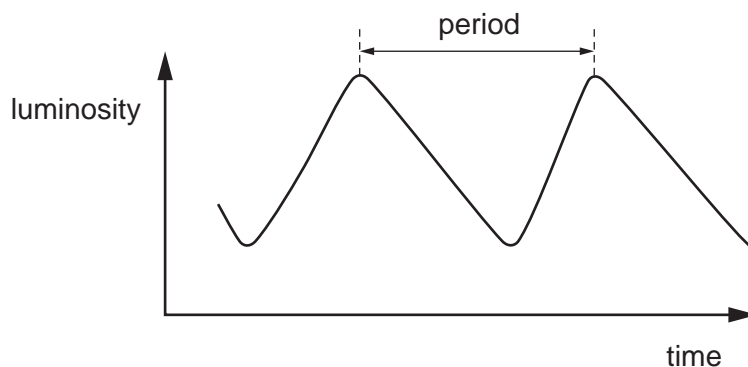


Fig. 2.1

A student determines the period T and mean luminosity L of the star.

The student repeats the process for different variable stars.

It is suggested that L and T are related by the equation

$$L = SKT^a$$

where S is the luminosity of the Sun, and a and K are constants.

- (a) A graph is plotted of $\lg L$ on the y -axis against $\lg T$ on the x -axis.

Determine expressions for the gradient and y -intercept.

gradient =

y -intercept =

[1]

(b) Values of T and L are given in Table 2.1.

Table 2.1

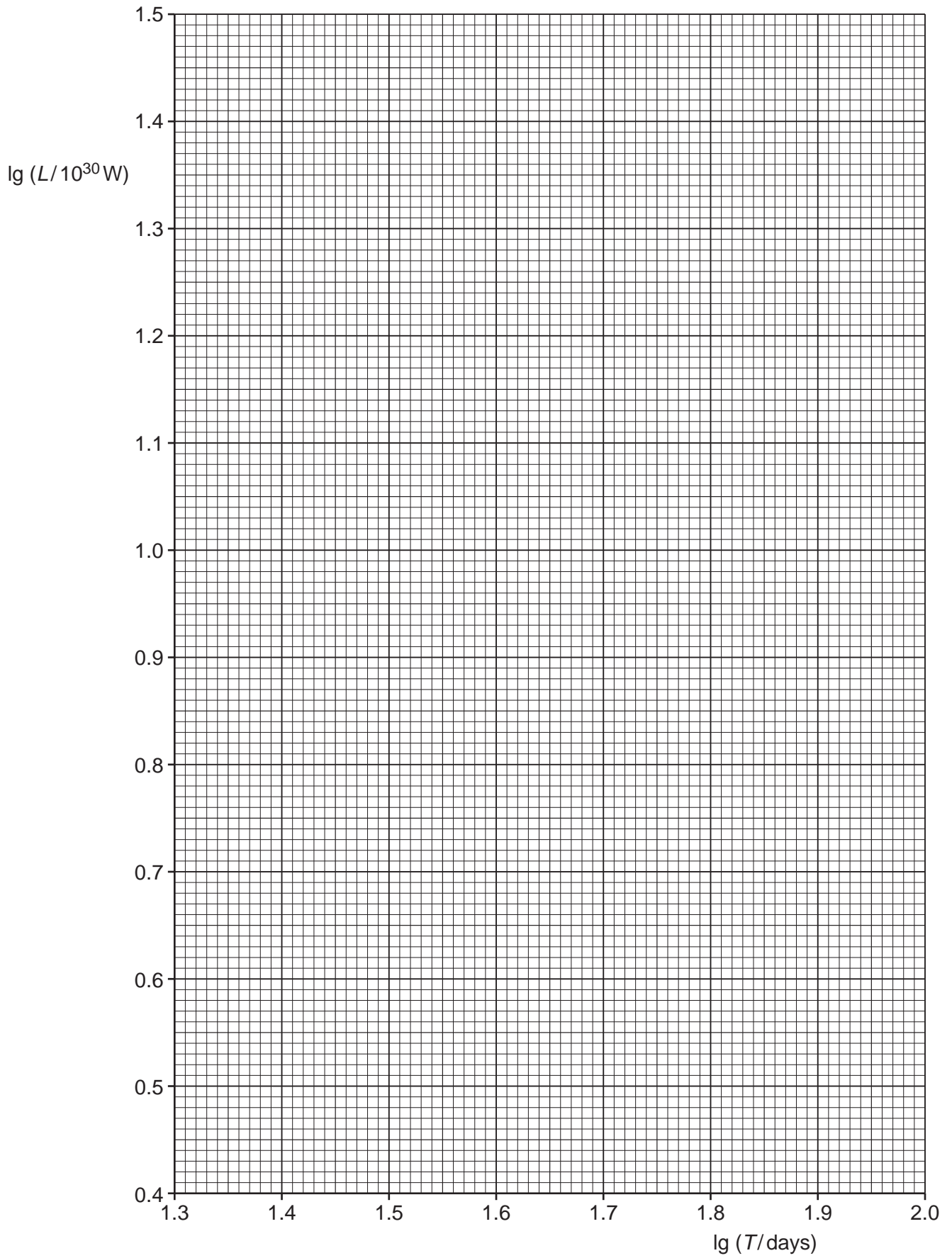
T/days	$L/10^{30}W$	$\lg(T/\text{days})$	$\lg(L/10^{30}W)$
22	2.9 ± 0.2		
32	4.9 ± 0.2		
42	6.9 ± 0.2		
54	9.8 ± 0.2		
78	16 ± 2		
97	21 ± 2		

Calculate and record values of $\lg(T/\text{days})$ and $\lg(L/10^{30}W)$ in Table 2.1.
Include the absolute uncertainties in $\lg(L/10^{30}W)$.

[2]

- (c) (i) Plot a graph of $\lg(L/10^{30}W)$ against $\lg(T/\text{days})$.
Include error bars for $\lg(L/10^{30}W)$. [2]
- (ii) Draw the straight line of best fit and a worst acceptable straight line on your graph. Label both lines. [2]
- (iii) Determine the gradient of the line of best fit. Include the absolute uncertainty in your answer.

gradient = [2]



- (iv) Determine the y -intercept of the line of best fit. Include the absolute uncertainty in your answer.

y -intercept = [2]

- (d) Using your answers to (a), (c)(iii) and (c)(iv), determine the values of a and K . Include the absolute uncertainties in your values. You need not be concerned with units.

Data: $S = 3.85 \times 10^{26} \text{ W}$

$a = \dots\dots\dots$

$K = \dots\dots\dots$

[3]

- (e) A variable star has a period of 5.0 days.

Determine the luminosity L of this star.

$L = \dots\dots\dots \text{ W}$ [1]

[Total: 15]

C - Powers in Logs

* 0019655344405 *



- 2 A student investigates the resonant frequency of a metal rod. The metal rod of length L is suspended from two rubber loops. A sensitive microphone with a cone is positioned at one end of the rod. The microphone is attached to an oscilloscope, as shown in Fig. 2.1.

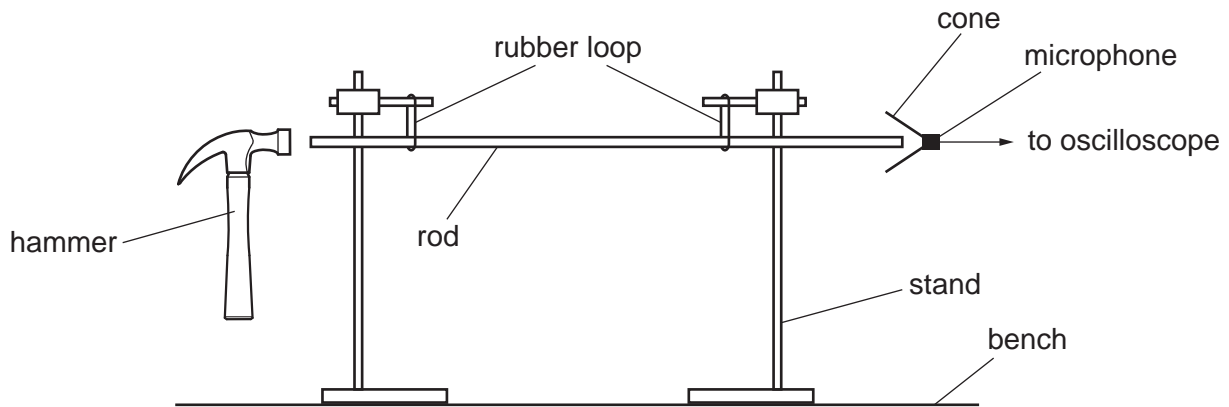


Fig. 2.1 (not to scale)

The rod is hit gently with a hammer.

The period T of the trace produced on the oscilloscope is determined.

The experiment is repeated for different values of L .

It is suggested that T and L are related by the equation

$$T = \frac{2L^n}{C}$$

where C and n are constants.

- (a) A graph is plotted of $\lg T$ on the y -axis against $\lg L$ on the x -axis.

Determine expressions for the gradient and y -intercept.

gradient =

y -intercept =

[1]



DO NOT WRITE IN THIS MARGIN



(b) Values of L and T are given in Table 2.1.

Table 2.1

L/cm	$T/10^{-5}\text{s}$	$\lg(L/\text{cm})$	$\lg(T/10^{-5}\text{s})$
54	24 ± 1		
70	32 ± 1		
86	39 ± 1		
108	49 ± 2		
140	64 ± 2		
167	74 ± 2		

Calculate and record values of $\lg(L/\text{cm})$ and $\lg(T/10^{-5}\text{s})$ in Table 2.1.
Include the absolute uncertainties in $\lg T$.

[2]

- (c) (i) Plot a graph of $\lg(T/10^{-5}\text{s})$ against $\lg(L/\text{cm})$. Include error bars for $\lg T$. [2]
- (ii) Draw the straight line of best fit and a worst acceptable straight line on your graph. Label both lines. [2]
- (iii) Determine the gradient of the line of best fit. Include the absolute uncertainty in your answer.

gradient = [2]



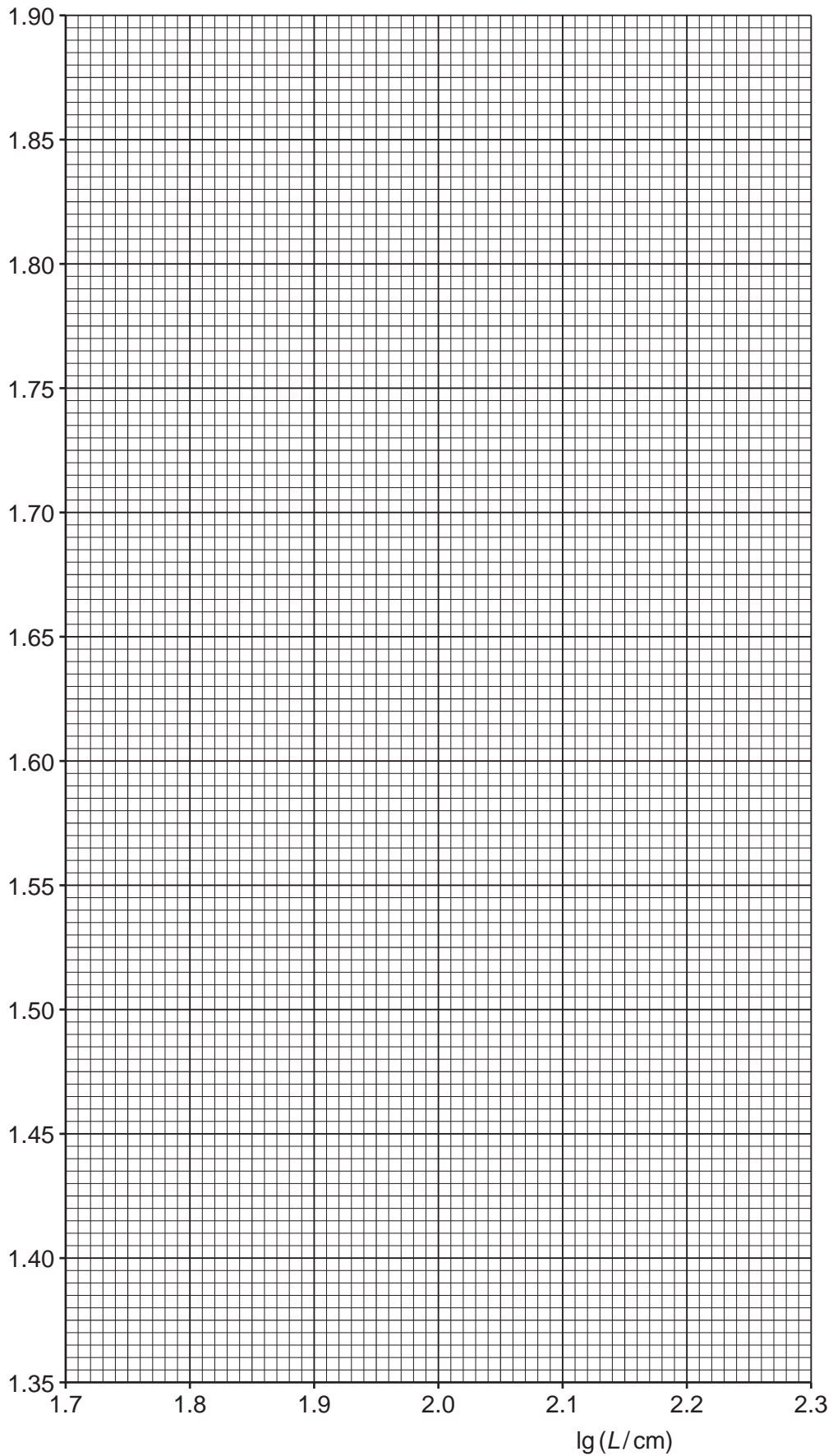
* 0019655344407 *



7



$\lg(T/10^{-5}\text{s})$



DO NOT WRITE IN THIS MARGIN



* 0019655344408 *



8



- (iv) Determine the y -intercept of the line of best fit. Include the absolute uncertainty in your answer.

y -intercept = [2]

- (d) Using your answers to (a), (c)(iii) and (c)(iv), determine the values of n and C . Include the absolute uncertainties in your values. You need not be concerned with units.

n =

C = [3]

- (e) The experiment is repeated. Determine the length L of the rod that gives a value of T of 0.10 ms.

L = cm [1]

[Total: 15]

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.



A - Powers in headings (+In)

5

- 2 A student investigates the discharge of capacitors in the circuit shown in Fig. 2.1.

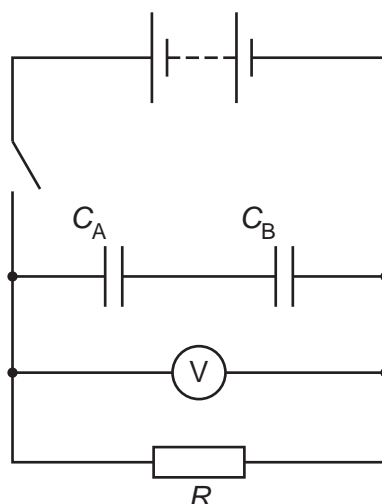


Fig. 2.1

The capacitors have capacitances C_A and C_B .

The student closes the switch to charge the capacitors.

The switch is opened and a stop-watch is started. The capacitors discharge through the resistor of resistance R . At a fixed time t the voltmeter reading V is recorded.

The experiment is repeated for different values of C_A and C_B .

For each combination of C_A and C_B , the combined capacitance C is calculated.

It is suggested that C and V are related by the equation

$$V = I_0 R e^{-\frac{t}{CR}}$$

where I_0 is the initial current in the resistor.

- (a) A graph is plotted of $\ln V$ on the y -axis against $\frac{1}{C}$ on the x -axis.

Determine expressions for the gradient and y -intercept.

gradient =

y -intercept =

[1]

(b) Values of C_A , C_B and V are given in Table 2.1.

Table 2.1

$C_A/10^{-4}\text{F}$	$C_B/10^{-4}\text{F}$	$\frac{1}{C}/10^4\text{F}^{-1}$	V/V	$\ln(V/V)$
2.2	2.2		2.45 ± 0.05	
2.2	3.3		2.75 ± 0.05	
2.2	5.6		3.05 ± 0.05	
3.3	3.3		3.10 ± 0.05	
3.3	5.6		3.50 ± 0.05	
5.6	5.6		3.85 ± 0.05	

The relationship between C , C_A and C_B is

$$\frac{1}{C} = \frac{C_A + C_B}{C_A C_B}$$

Calculate and record values of $\frac{1}{C}/10^4\text{F}^{-1}$ and $\ln(V/V)$ in Table 2.1.

Include the absolute uncertainties in $\ln(V/V)$. [2]

(c) (i) Plot a graph of $\ln(V/V)$ against $\frac{1}{C}/10^4\text{F}^{-1}$.

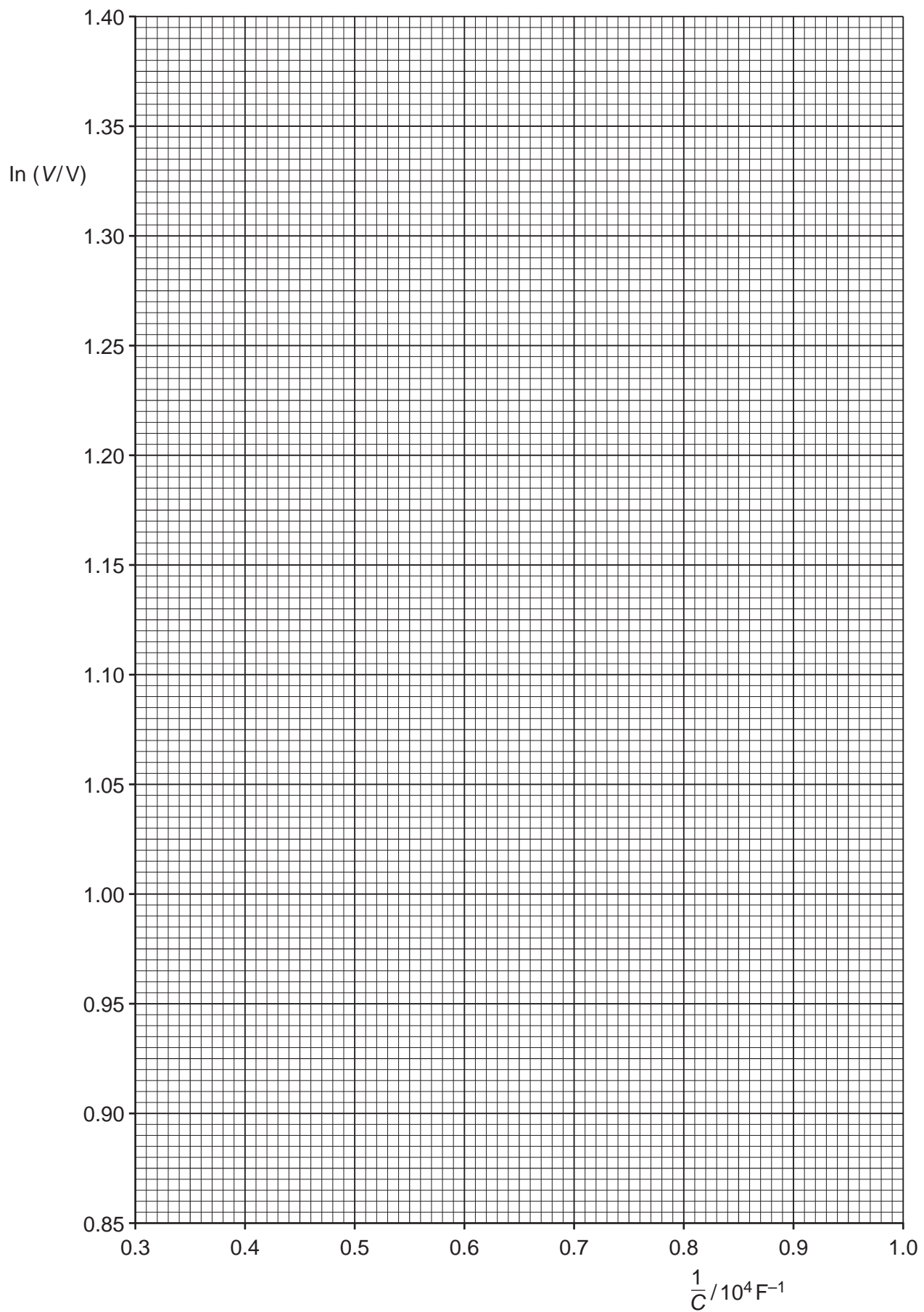
Include error bars for $\ln(V/V)$. [2]

(ii) Draw the straight line of best fit and a worst acceptable straight line on your graph. Label both lines. [2]

(iii) Determine the gradient of the line of best fit. Include the absolute uncertainty in your answer.

gradient = [2]

7



- (iv) Determine the y -intercept of the line of best fit. Do **not** include the absolute uncertainty.

y -intercept = [1]

- (d) (i) Using your answers to (a), (c)(iii) and (c)(iv), determine the values of R and I_0 . Include appropriate units.

Data: $t = (30 \pm 1)\text{s}$

$R = \dots\dots\dots$

$I_0 = \dots\dots\dots$ [3]

- (ii) Determine the percentage uncertainty in R .

percentage uncertainty in $R = \dots\dots\dots$ % [1]

- (e) The experiment is repeated with the same value of t . Determine the combined capacitance C that gives a value of V of 1.20 V.

$C = \dots\dots\dots$ F [1]

[Total: 15]