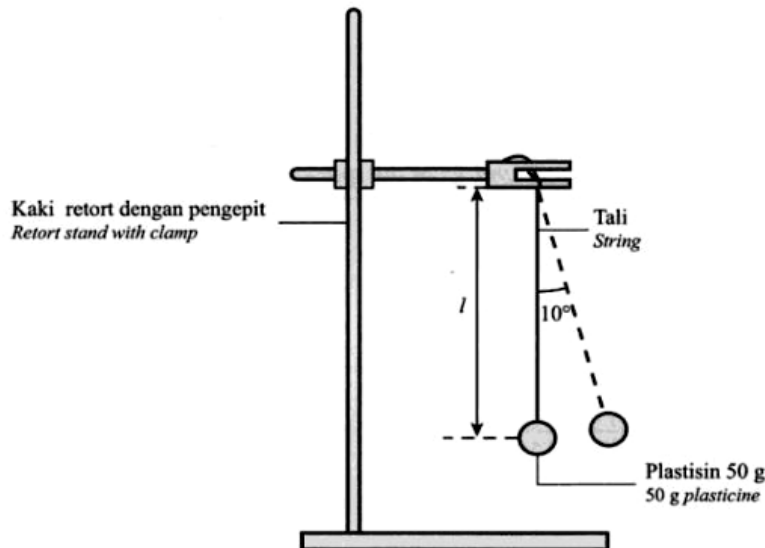


1. Anda dikehendaki menjalankan satu eksperimen untuk menyiasat hubungan antara panjang bandul, l dengan tempoh ayunan, T .
You are required to carry out an experiment to investigate the relationship between the length of pendulum, l and the period of oscillation, T .



Rajah 1
Diagram 1

Jalankan eksperimen dengan menggunakan langkah-langkah di bawah:
Carry out the experiment by using the steps below:

- (i) Susun radas dengan meletakkan tali di antara belahan gabus dan gabus tersebut dikepit pada kaki retort seperti yang ditunjukkan dalam Rajah 1. Ukur panjang bandul, l sepanjang 30.0 cm dengan pembaris meter.
Arrange the apparatus by placing the string in between the split of the cork and the cork is clamping on the retort stand as shown in Diagram 1. Measure the length of the pendulum, l of 30.0 cm using metre rule.
- (ii) Sesarkan bandul sebanyak 10° dan lepaskan bandul tersebut. Ukur masa yang diambil bagi 10 ayunan lengkap dengan jam randik. Catatkan bacaan, t_{10} dalam ruang di iv(b).
Displace the pendulum by 10° and release the pendulum. Measure the time taken for 10 complete oscillation, using stopwatch. Record the reading, t_{10} in the space in iv(b).
- (iii) Ulang langkah (i) dan langkah (ii) dengan menggunakan panjang bandul, $l = 40.0$ cm, 50.0 cm, 60.0 cm dan 70.0 cm.
Repeat steps (i) and (ii) by using lengths of the pendulum, $l = 40.0$ cm, 50.0 cm, 60.0 cm and 70.0 cm.
- (iv) Berdasarkan eksperimen yang dijalankan, anda dikehendaki untuk;
Based on the experiment conducted, you are required to;
 - (a) Nyatakan,
State,
 - (i) pemboleh ubah dimanipulasikan.
manipulated variable.

- (ii) pemboleh ubah bergerak balas.
responding variable.

[1 markah/mark]

- (b) Hitungkan tempoh ayunan, T dengan menggunakan persamaan di bawah bagi setiap panjang bandul, l .
Calculate the period of oscillation, T by using the equation below for each length of pendulum, l .

$$T = \frac{t_{10}}{10}$$

Jadualkan data anda bagi semua nilai l , t_{10} , T dan T^2 dalam ruang disediakan.
Tabulate your results for all values of l , t_{10} , T and T^2 in the space provided.

[6 markah/marks]

- (c) Pada kertas graf yang disediakan, plot graf T^2 melawan l .
On the graph paper provided, plot a graph of T^2 against l .

[3 markah/marks]

- (d) Berdasarkan graf di (c), nyatakan hubungan antara T^2 dan l .
Based on the graph in (c), state the relationship between T^2 and l .

[1 markah/mark]

- (e) Hitungkan kecerunan, k bagi graf T^2 melawan l .
Calculate the gradient, k for the graph of T^2 against l .

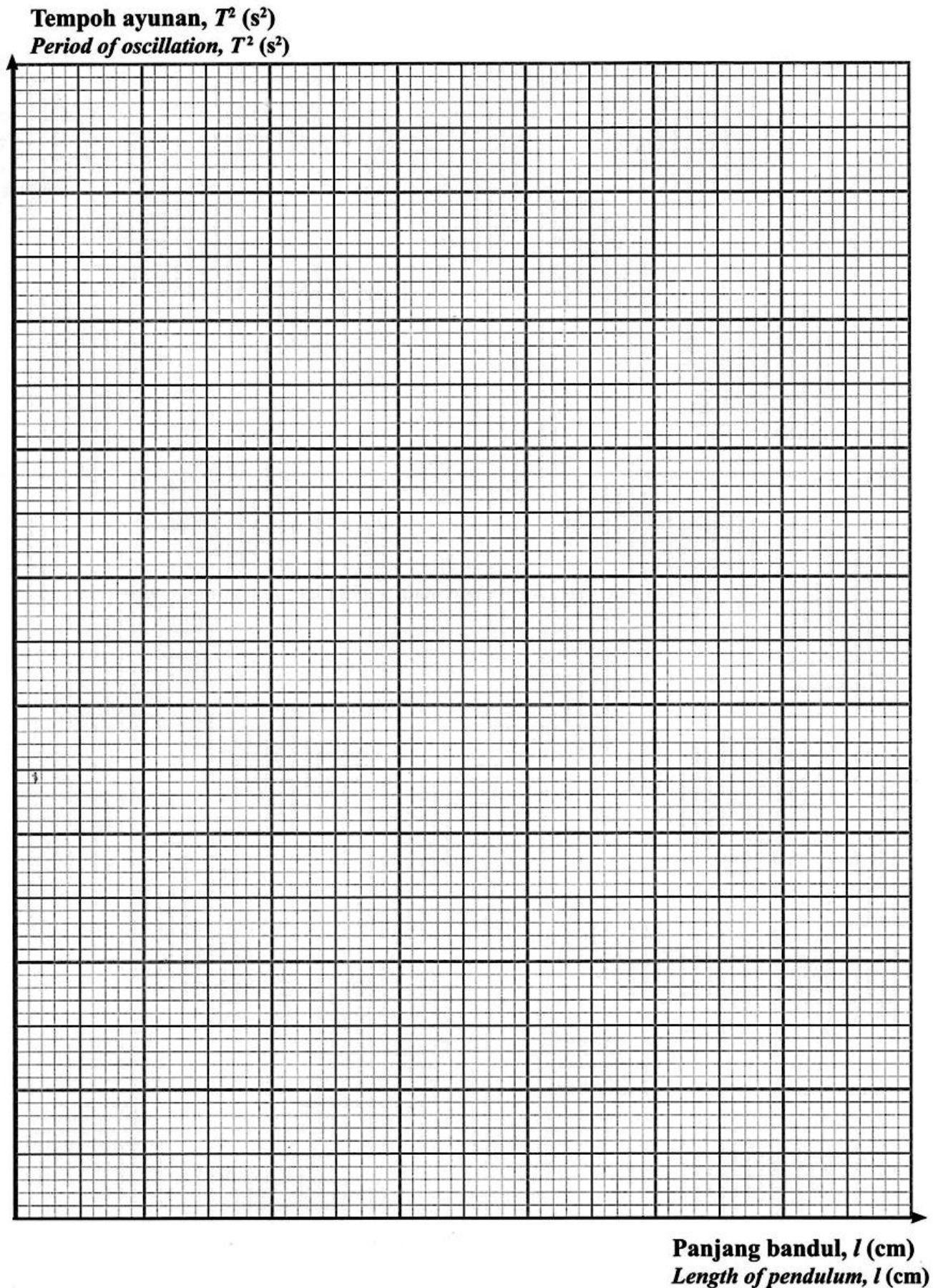
$$k = \underline{\hspace{2cm}}$$

[2 markah/marks]

- (f) Sekiranya jisim plastisin ditambah dalam Rajah 1, apakah yang akan berlaku kepada tempoh ayunan bandul?
If the mass of the plasticine is added in Diagram 1, what will happen to the period of oscillation of the pendulum?

[1 markah/mark]

Graf T^2 melawan l
Graph of T^2 against l



1 (a)	(i)	Panjang bandul, l <i>Length of pendulum, l</i>																								
	(ii)	Tempoh ayunan, T ; Masa untuk 10 ayunan lengkap, t_{10} <i>Period of oscillation, T; Time taken for 10 complete oscillations, t_{10}</i>																								
(b)		<table><tr><th>l (cm)</th><th>t_{10} (s)</th><th>T (s)</th><th>T^2 (s²)</th></tr><tr><td>30.0</td><td>23.05</td><td>2.305</td><td>5.313</td></tr><tr><td>40.0</td><td>26.12</td><td>2.612</td><td>6.823</td></tr><tr><td>50.0</td><td>28.87</td><td>2.887</td><td>8.335</td></tr><tr><td>60.0</td><td>31.64</td><td>3.164</td><td>10.011</td></tr><tr><td>70.0</td><td>33.91</td><td>3.391</td><td>11.499</td></tr></table>	l (cm)	t_{10} (s)	T (s)	T^2 (s ²)	30.0	23.05	2.305	5.313	40.0	26.12	2.612	6.823	50.0	28.87	2.887	8.335	60.0	31.64	3.164	10.011	70.0	33.91	3.391	11.499
l (cm)	t_{10} (s)	T (s)	T^2 (s ²)																							
30.0	23.05	2.305	5.313																							
40.0	26.12	2.612	6.823																							
50.0	28.87	2.887	8.335																							
60.0	31.64	3.164	10.011																							
70.0	33.91	3.391	11.499																							
(c)		Tempoh ayunan, T^2 (s²) <i>Period of oscillation, T^2 (s²)</i> Panjang bandul, l (cm) <i>Length of pendulum, l (cm)</i>																								

(d)	T^2 berkadar terus dengan l <i>T^2 is directly proportional to l</i>
(e)	$k = \frac{11.2 - 0}{67 - 0}$ $= 0.1672 \text{ s}^2 \text{ cm}^{-1}$
(f)	Tidak berubah <i>No change</i>

Cepat Daftar Latest Exam Tips SEMINAR

100% Real Tips

whatsapp 012-2300392
untuk jadual waktu

15 Nov Bermula
Online & Fizikal
log in studytips.com.my