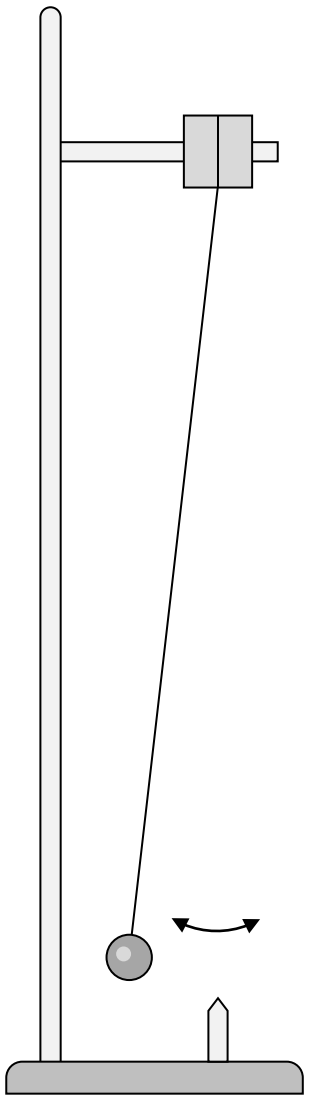
6th July

1. The equation relating to a pendulum undergoing simple harmonic motion is:

$$T = 2\pi\sqrt{\frac{L}{g}}$$



a. **Rearrange** the equation to make L/T^2 the subject

An experiment was carried out by a student to determine the gravitational field strength using a simple pendulum. They adjusted the length of a pendulum and measured the time for ten complete oscillations.

b. Complete the table, with values for the **time period** for one oscillation and **T^2**

Length / m	t_{10} / s	T / s	T^2 / s^2
0.30	10.8	1.08	1.17
0.35	11.5	1.15	1.32
0.40	12.6	1.26	
0.45	13.2	1.32	
0.50	14.2		
0.55	14.4		
0.60	15.2		

c. Plot the data on the graph and calculate the **gradient** of the straight line

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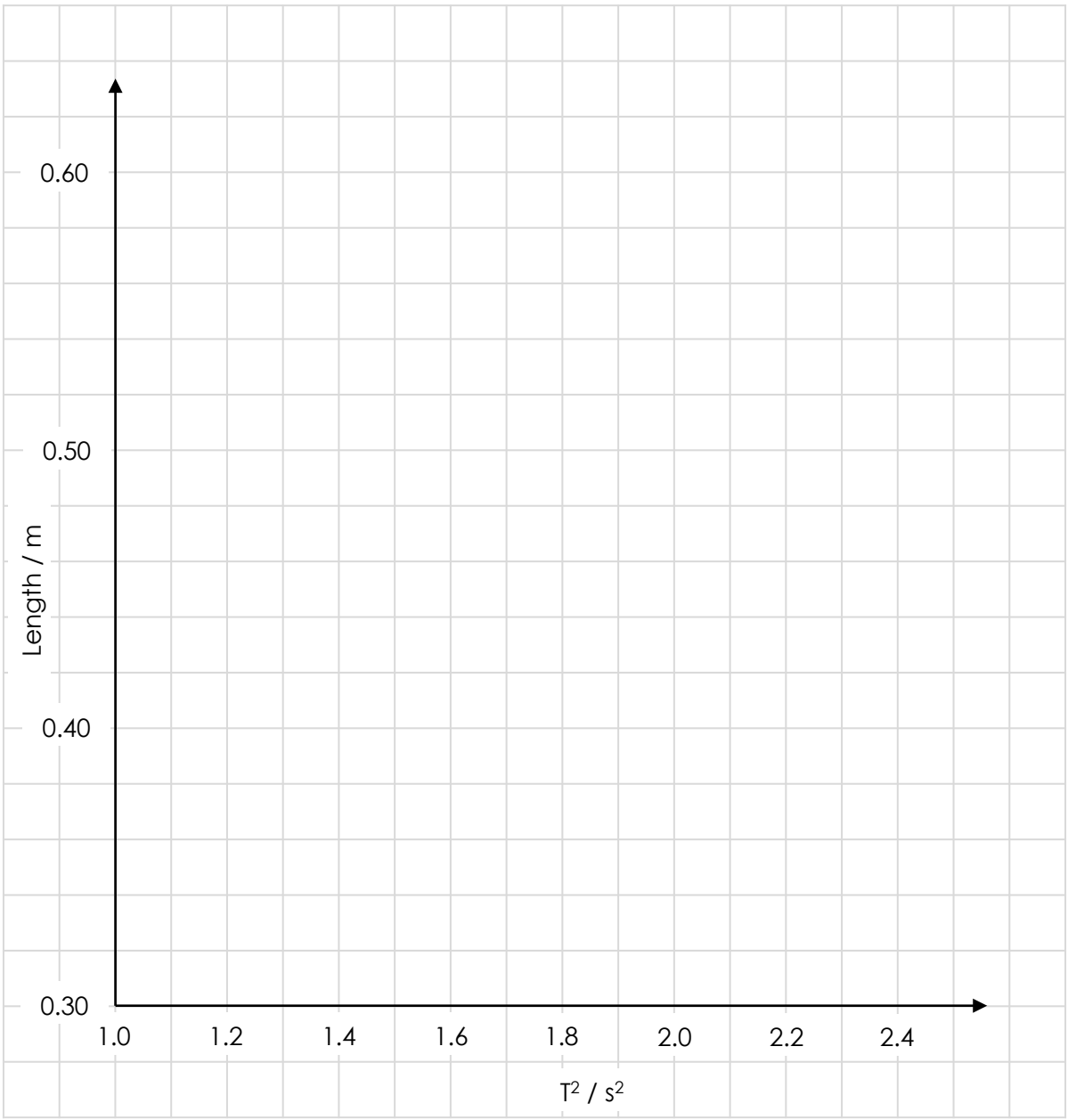

The gradient of the line is equal to L/T^2.

d. Use your calculated value for the gradient to determine an experimental **value** of '*g*' from this experiment