

2 Modelling from Data

- (a) The period is affected by the length of the pendulum.
 (b) The period is not affected by the mass.

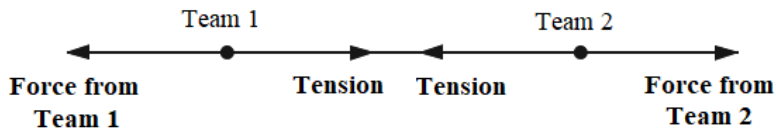
The above relationships are confirmed by experiment.

The formula for the Period T is

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

3 Motion and Force

1. Diagram



- (a) All four forces are equal in magnitude.
 (b) They all act in the same line, forming two pairs opposite in direction.

4 Newton's Law of Gravitation

- 2.8×10^{-9} N
- 33.2 N, which is 4.4% of his weight on the Earth's surface
- 1.64 m Newtons
- 6 to 1
- $\frac{9}{10}$ of the distance, that is 3.6×10^5 km

6 Units and Dimensions

- (a) and (b) are consistent.
- (a) ML^2T^{-2} (b) ML^2T^{-2}
 (c) MLT^{-1} (d) $ML^{-1}T^{-2}$
- $x = -1, y = \frac{1}{2}, z = -\frac{1}{2}$
- $h = k \times F^{\frac{1}{2}} \times v^{-\frac{1}{2}} = k \sqrt{\frac{F}{v}}$