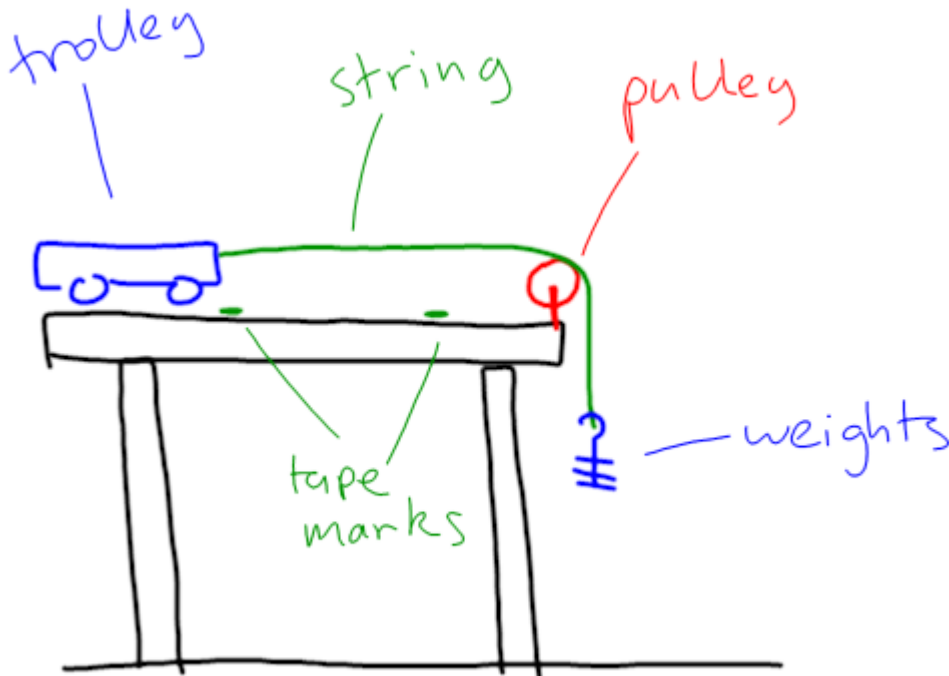


Investigating Newton's Second Law

In this experiment you will find the acceleration of a trolley being pulled by some weights.

Diagram



Method

Use tape to mark out a 50cm distance for the trolley to move through.

Attach a weight to the string, hang it over the pulley, and hold the trolley at the start mark.

Release the trolley (do not push it) and start the timer. Stop the timer when the trolley reaches the other tape mark.

Then increase the weight and repeat. Use a range of weights from 0.1N to 0.6N.

(Note: marking the desk with a board pen may work better than tape)

Analysis

Add another column to your table for acceleration, and calculate the acceleration of the trolley for each row.

Plot a graph with weight on the y-axis and acceleration on the x-axis. Add a line of best fit.

Draw a free body diagram for the trolley, and formulate Newton's Second Law for the horizontal motion of the trolley.

Then work out what the gradient and the y-intercept of the graph tell you.