Core practical 9: Investigate the relationship between the force exerted on an object and its change of momentum

Objective

- To determine the momentum change of a trolley when a force acts on it as a function of time

Safety

- There are trolleys and masses in motion so you should produce an appropriate risk assessment.

All the maths you need

- Recognise and make use of appropriate units in calculations.
- Use ratios, fractions and percentages.
- Use an appropriate number of significant figures.
- Identify uncertainties in measurements and use simple techniques to determine uncertainty when data are combined by addition, subtraction, multiplication, division and raising to powers.
- Translate information between graphical, numerical and algebraic forms.
- Plot two variables from experimental or other data.
- Understand that $y = mx + c$ represents a linear relationship.
- Determine the slope and intercept of a linear graph.

Useful equations:

- $F \Delta t = m \Delta v$ shows the impulse of a force is equal to the change in momentum.
- $y = mx + c$ shows why the intercept should be zero.

Equipment

- dynamics trolley or air track vehicle
- runway or air track
- bench pulley
- string
- 5 slotted masses (10 g) and hanger
- light gate and recorder
- stop clock
- metre ruler