Physics

Formulae and Calculations

The 3 basic Kinematic equations describing the laws of motion are:

$$v = u + at$$

$$v^2 = u^2 + 2as \qquad s = ut + \frac{1}{2}at^2$$

$u = initial\ velocity \quad v = final\ velocity \quad a = acceleration \quad s = displacement \quad t = time$

Example:

A Boeing 747 accelerates at 5 ms^{-2} reaching a velocity of 180 ms^{-1} in 30 seconds.

Calculate the displacement of the plane.

Solution:

$$s = ut + \frac{1}{2}at^2$$

$$s = 180 \times 30 + \frac{1}{2} \times 5 \times 30^2$$

$$s = 5400 + \frac{1}{2} \times 5 \times 30^2$$

$$s = 5400 + 2250$$

$$s = 7650m$$

Calculations using formulae are all around us, sometimes where you might not expect!

Which vital rules of Numeracy are used in the above calculation?

Claire is a taxi driver, she charges £2 per journey and £1.60 per mile, can you make her charges in to an easy to use formula?

How many different formulae can you think of that you might use without normally realising it?

Which other subjects would you use formulae in?

Numeracy Across Learning @ St Modan's High School