

Quick Quiz 1

$F=ma$; $v=u+at$; $p=mv$; $s=ut + \frac{1}{2} a t^2$; $v^2=u^2+2as$; $pe=mgh$; momentum = $m v$

QUESTION 1 [points]

A certain rifle uses a bullet of mass of 10.2 g, its muzzle velocity is 821 m/s, and the length of the barrel is 0.80 m. Compute the resultant force accelerating the bullet, assuming it to be constant.

QUESTION 2 [points]

A forensic scientist comes up with an equation (below) to describe the distance (d) a body will likely be found from the edge of a cliff based on the height of the cliff (h) and the velocity (v) with which it is thrown (assuming it is thrown exactly horizontally). Check the equation using dimensional analysis and indicate whether it is dimensionally correct (yes or no).

$$d = \frac{v^2 h}{g}$$

Problem 3 [5 points]

A sports car starting from rest can attain a speed of 110 km/hr in 8s. and may be assumed to move with uniform acceleration. A man can run 100 m in 9.2 s. If the runner moves with constant speed and the car starts at the instant that the he passes it, how far will both travel before the car catches up with the runner? *Hint: think about the distances travelled.*

Summary:

Overall Mark I got:

Things I know well:

Things that are unclear: