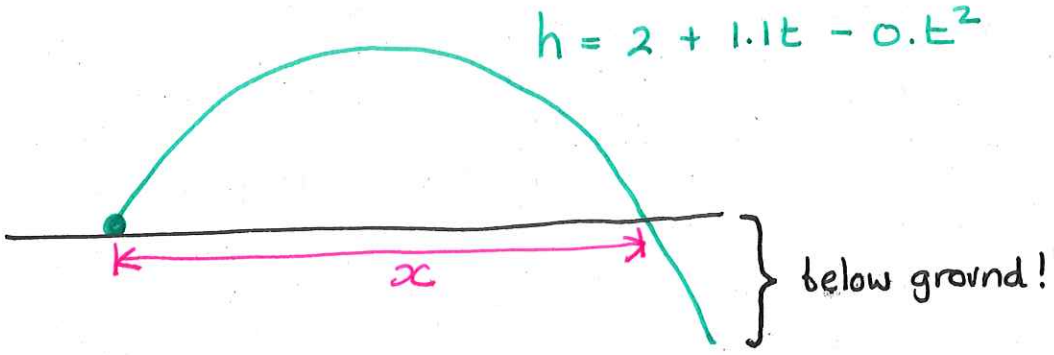
YEAR 1 APPLIED — MODELLING IN MECHANICS — Chapter 8

- MODELLING



only valid in the range x
use common sense

- KEY DEFINITIONS

Particle – dimension are negligible
mass acts at single point

Rod – thickness is negligible
mass acts at single point

Inextensible string – string does not strech

- ASSUMPTIONS

Ignore air resistance

Ignore rotational motion

No friction

Mass acts at a single point

- SI UNITS

measurement	unit
mass	kg
Length	metres
Time	seconds
Speed / Velocity	ms^{-1}
Acceleration	ms^{-2}
Force / Weight	Newtons

changing units

$$6\ kmh^{-1} = 6\ \frac{km}{h} = 6\ \frac{\times 1000}{\times 3600}$$

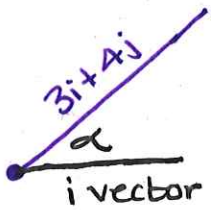
$$= \frac{6000}{3600} = \frac{5}{3}\ ms^{-1}$$

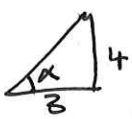
- VECTORS

Velocity $3i + 4j$

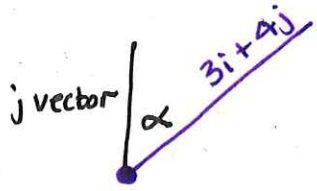
Speed $\sqrt{3^2 + 4^2} = 5$

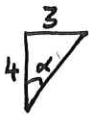
angle with i vector





$\tan\alpha = \frac{4}{3}$





$\tan\alpha = \frac{3}{4}$