PHY138Y - Mechanics - Class 2 - Sept 13/06

MECHANICS forces & energy

do to objects

Classical Physics

↑ pre quantum mechanics

Assumes:

1. World is a machine.
2. Describable by LAWS
3. LAWS are mathematical

Is world like this?

NO

But assumptions are useful!

Description of "World" in Physics

- Math as a language.
- Everyday word with a precise definition.

↓

Operational Definition (pg 5-6)

by a operation
procedure
experiment

CHAPTER 1 an overview

§1.1 Motion Diagrams

Visualisation technique

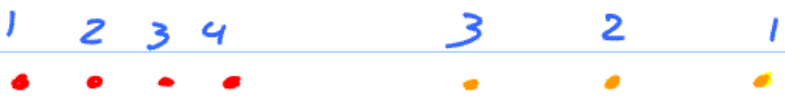
Example: Movie
cut up frames & stack.

Stop To Think 1.1 Excellent!

§1.2 - Models

Important Parts

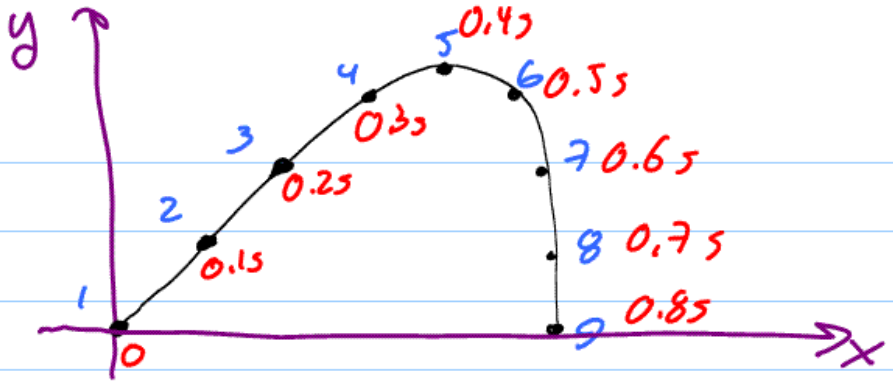
Model Cars as Particles



§1.3 - Position & Time

Example Projectile

Motion Diagram



Choose coordinate system.

In principle arbitrary

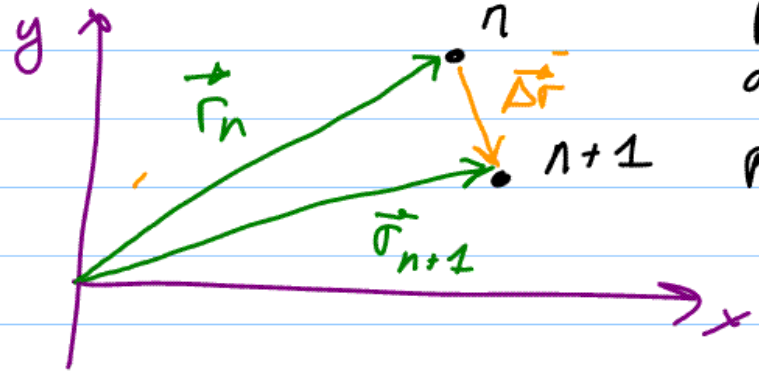
In practice, some choices are clever

Choose a time $t = 0$

Same remarks apply

Notation! $\vec{A}$ or $\vec{a}$

Position Vector: $\vec{r}$



points from origin to position

Displacement Vector $\vec{\Delta r}$

Δ "delta" $\equiv$ change of

$$\vec{r}_n + \vec{\Delta r} = \vec{r}_{n+1}$$

$$\Delta r = \vec{r}_{n+1} - \vec{r}_n$$