

PHY138 - Mechanics - Class 3 - Sept 18/06

Everyday words \bar{c} precise def'n,
in physics

displacement } almost same
distance } thing in
every day usage

§1.4 Velocity

recall: \vec{r}_i position vector
at time t_i

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

$$\text{velocity } \vec{v}_{\text{avg}} \equiv \frac{\Delta \vec{r}}{\Delta t}$$

$$\text{speed } \frac{\text{distance}}{\text{time}}$$

§1.5 - Acceleration

$$\vec{a} = \frac{\Delta \vec{v}}{\Delta t}$$

$\vec{a} \neq 0$ if \vec{v} changes
magnitude & / or direction

§1.6 - Motion Diagrams

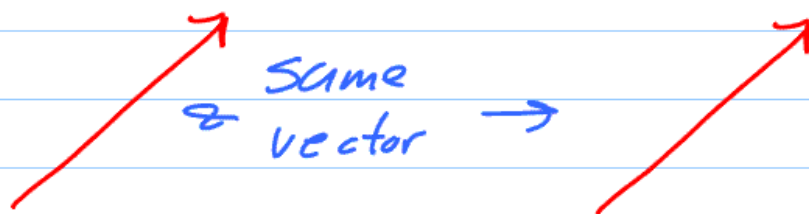
Introduced last class

2 things to add:

(1) (From Chapt 3)

Vector: magnitude and direction.

not where it is



§ 1.7 - WORDS TO SYMBOLS

NOTHING TO ADD \equiv "NTA"

§ 1.8. PROBLEM SOLVING (of pg 24)

① Model

② Visualise { picture
diagram
graph

③ **GUESS**

④ Solve

If numeric, put in
number LAST.

⑤ Assess

Example Barrie 90 km North

at TO

leave
at
same
time

Mathematician! TO \rightarrow Barrie

@ 100 km/hr

Physicist: TO \rightarrow Barrie

@ 120 km/hr

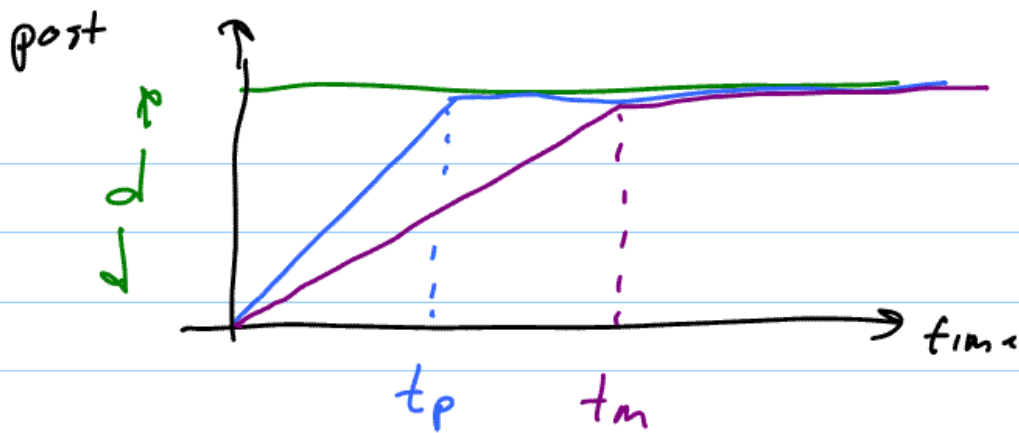
How long is physicist in Barrie
when mathematician shows up?

(1) Model

people's cars: particles
tiny 400 straight

(2) Visualise





$$\underline{t_m - t_p}$$

GUESS! 10 minutes

SOLVE! $d = v_p t_p = v_m t_m$

$$t_m - t_p = 0.18 \text{ hr} = 11 \text{ minutes} \quad \text{wrong!}$$

$$= \underline{0.15 \text{ hr} = 9 \text{ minutes}}$$

ASSESS

§1.9 - Units & Significant Figures

$$\underline{8202} \quad \text{to } 3 \text{ sig figs}$$

$$8200 \quad 8.20 \times 10^3$$