Physics 1   2017-09-12
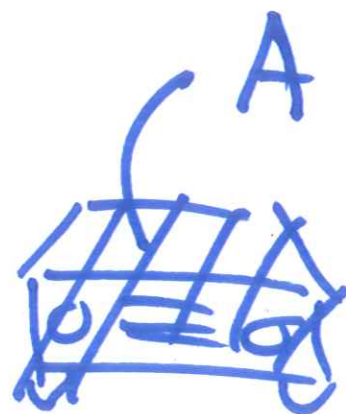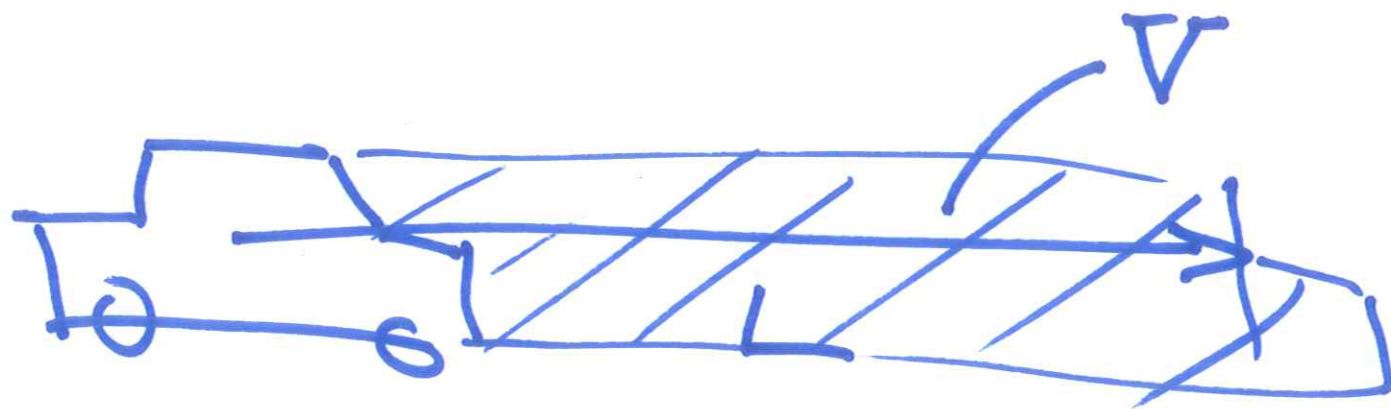
Agenda — office hours & tutoring.

— problem sets & worksheets.

— thrown stone.

— (Assumptions)

release

velocity
ms^{-1}

kinematics

history of
all positions

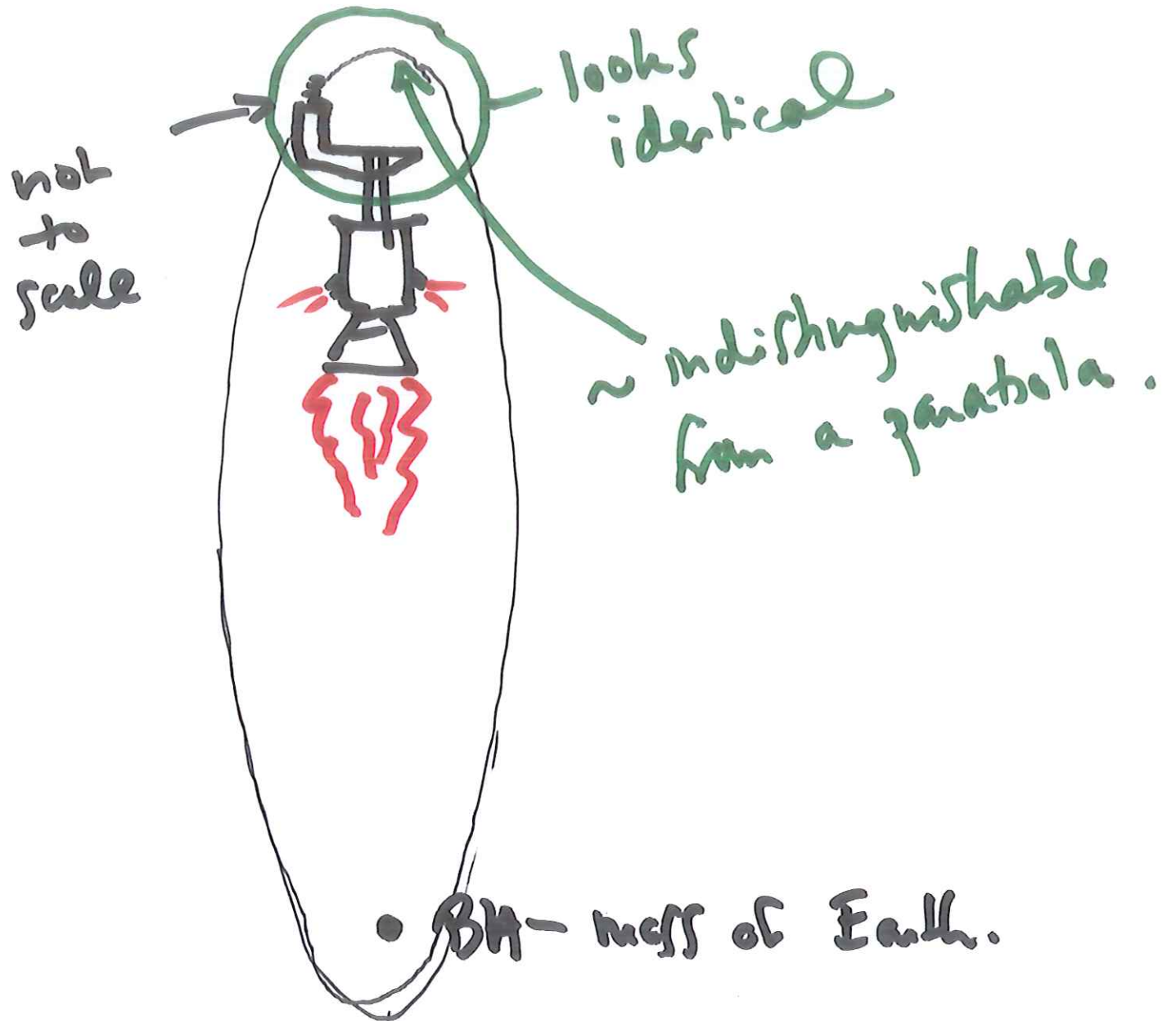$\vec{v}$

A

$\vec{a}$

B

- guess
- discuss
- assume ?
- solve
- check

Assume:
- $\vec{a}$ constant.
- only gravity
- no air resistance

water.

not
to
scale

looks
identical

~ indistinguishable
from a parabola.

BH — mass of Earth.

velocity @ A

velocity @ B

$\vec{V_A}$

V_{Ay}

V_{Ax}

$\vec{V_B}$

V_{Bx}

$\vec{a} \, \Delta t_{AB} \equiv \vec{\Delta V}$
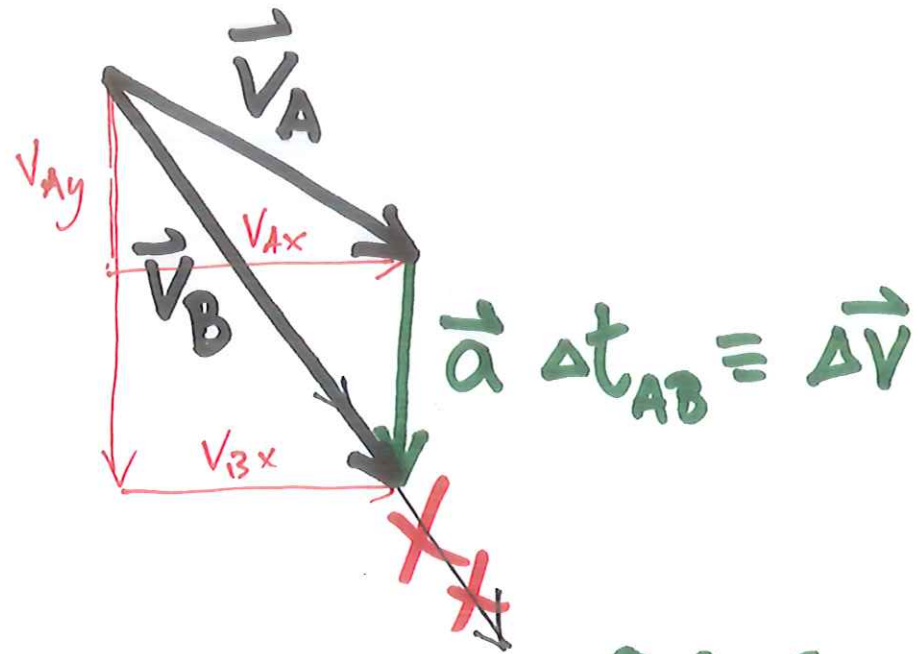
times a

vector on scalar

$$\vec{V_B} = \vec{V_A} + \vec{\Delta V}$$

$$\vec{\Delta V} = \vec{a} \, \Delta t_{AB}$$

ms^{-1} ms^{-2} s

$$\vec{v}(t) = \vec{v}_0 + \vec{a}t \qquad \vec{v}(t=0) = \vec{v}_0$$

$$\vec{x}(t) = \vec{x}_0 + \vec{v}_0 t + \frac{1}{2}\vec{a}t^2$$

$\underbrace{\phantom{\vec{x}_0 + \vec{v}_0 t}}$

parabola

$\vec{x} \cdot \hat{u}$

t