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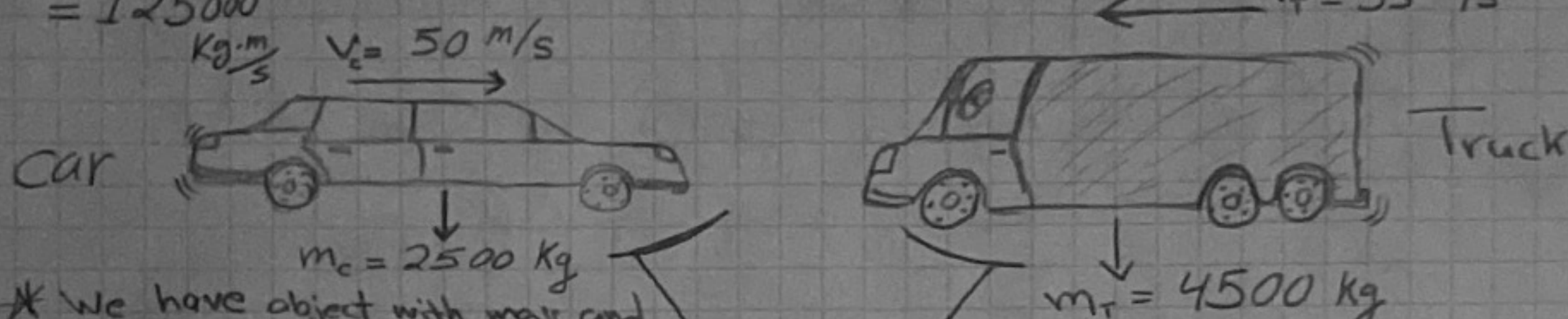
Module-05 project

rough draft

Impulse and momentum

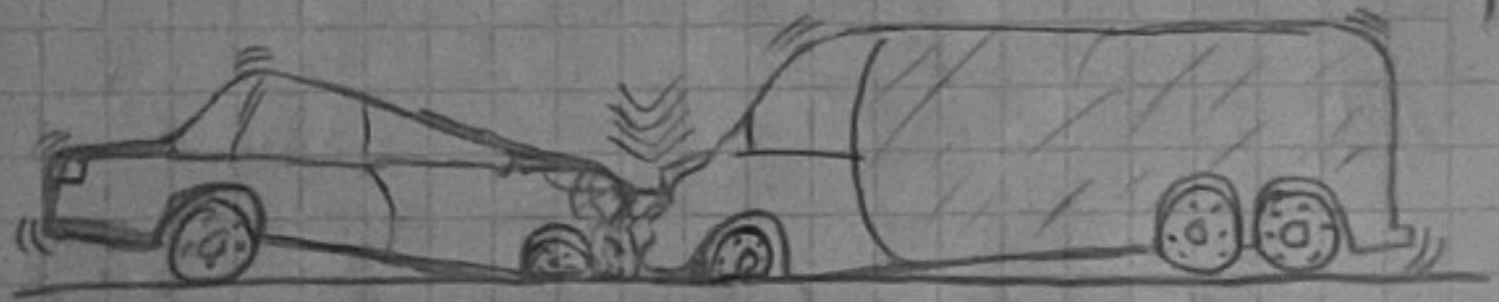
$\vec{P} = m\vec{v}$
$= (2500)(50)$
$= 125000$
$Kg \cdot \frac{m}{s}$

$\vec{P} = m\vec{v}$
$= (4500)(35)$
$= 157500 \frac{Kg \cdot m}{s}$



* We have object with mass and velocity are moving, So it has momentum.

(both car and Truck in motion)



* we have a collision so, this impact will effect a change to the momentum of both object with is called a Impulse.

* we notic here more damge on the car more then the Truck, and this mean we have more momentum in the truck do to the more in mass.

* what is happen here is change in the momentum of both object. And from here we consedier NEWTON, 2nd law:-

$$F_{net} = ma \longrightarrow a = \frac{\Delta v}{t} \longrightarrow F_{net} = m \cdot \frac{\Delta v}{t}$$

$$F_{net} = \frac{m\Delta v}{t}, \text{ since } m\Delta v = \vec{P}$$

we have:- $F_{net}(t) = \Delta\vec{P} = \text{Impulse}$

$(I) \longleftarrow$ Impulse $= \Delta\vec{P} = F_{net} \cdot t$ ← time

and that's mean we can have for the same amount of $\Delta\vec{P}$ diffrent F_{net} and diffrent t.

Then, in an accident cars experiance a $\Delta\vec{P}$ in very small time, wich we call it Impulse.

but If we try to change the time in $\Delta\vec{P}$ we can increase or decreases $\Delta\vec{P}$.

for example if we change in car designe to make the body opserive accdint will take longer time till we reach the passengers wishe may safe thier life.

$$\Delta\vec{P} = F_{net} \cdot t \uparrow \Rightarrow \text{Smaller } \Delta\vec{P} = \text{smaller}(I)$$

$$\text{and } \Delta\vec{P} = F_{net} \cdot t \downarrow \Rightarrow \text{bigger } \Delta\vec{P} = \text{bigger}(I)$$