NAME: Mrs. Sjuts | **DATE:** Mon, Sept 27, 2021

TOPIC: Momentum & Conservation of Mom

ESSENTIAL QUESTION: How do you apply the Law of Conservation of Momentum to solve real life problems? (Obj 4)

QUESTIONS AND CONNECTIONS:

What is momentum?

Equation? Units?

How is momentum related to Force?

#1

NOTES:

momentum - refers to the qty of motion an obj has & is depend upon m & v [VECTOR]

→ all obj have mass, so if it's moving then it has momentum "mass in motion"

→ $p = mv$

$kg \cdot m/s = kg \times m/s$

→ Obj w/momentum are diff. to stop. You must apply a force for a period of time

Ex: In sports, if a team has a lot of mom they are diff to stop or beat. A great F would be needed or a F for a long time (chip away).

* Again, if ↑p ⇒ you'd need ↑F or ↑t to change motion of obj.

<< #1 on ws together >>

What is impulse?

How does it relate to F, p, Δv, t?

How does collision time affect the force felt?

#2

Impulse: change in momentum or Fxt

Recall 2nd Law...

$F = ma \rightarrow F = \frac{m \cdot \Delta v}{t} \rightarrow Ft = m\Delta v$ (Imp) (Δp)

In a collision, an obj experiences a F for a specific amount of time that results in a change in momentum. The result is a change in motion or acceleration. The Impulse experienced by the obj = Δ in momentum.

$F \cdot t = m \cdot \Delta v$

padded dashboards, padded gym walls, egg drop, water balloon toss,

↑ collision time = ↓ acting on obj

Ex: air bags, crumple zones, ride punch, cushion ve

$FT = \Delta p = Ft$

QUESTIONS AND CONNECTIONS:	NOTES:
How does rebounding affect collisions?	'Rebounding ↑ Δv = ↑ Δp = ↑ Impulse ⇒ MORE DANGEROUS' → typically means greater F Collisions, like BUG & BUS... • F are same → 3rd Law • Impulse is same → F × t (time of interaction is same) • Δp is same → $F \times t = m\Delta v$ * Acceleration is different
What is L of C of M? #3	Law of Conservation of Momentum total momentum of the obj before the collision is equal to the total momentum of the obj after the collision (closed system)

SUMMARY: