16 Sep
17 Sep

Momentum

Q| In science, what do you think conservation means?

Today's List

- [ ] Momentum
- [ ] Conservation of momentum (CoM)
- [ ] Momentum Lab
  - Setup Notebook
  - Lab
  - Excel Document
  - Form
- [ ] Journal- Use CoM to describe what happens when a car is rear ended by a texting teen.

Intentionally Blank.

1 Momentum - product of mass + velocity

Symbol is p

Amount of 'stuff'

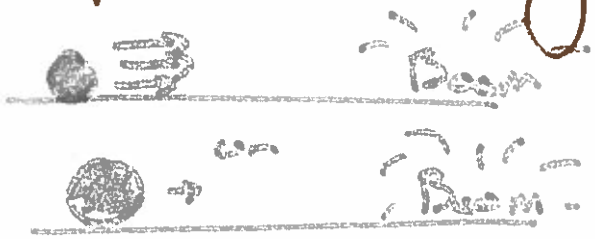
speed + direction

Eqn. - Momentum = mass X velocity

$$p = mV$$

Units - $p = mV = kg \times \frac{m}{s} = \frac{kgm}{s}$

Example - Bowling → either a big ball thrown slow or a small thrown fast behave the same



Calculation

- Bowlig ball ⇒ 5kg, 9m/s → $p = mv = 45 \frac{kgm}{s}$
- Car ⇒ 1000kg, 30 m/s → $p = 30{,}000 \frac{kgm}{s}$
- Semi ⇒ 35,000 kg, 30 m/s → $p = 1{,}050{,}000$ kgm/s

1 Conservation of Momentum (CoM)

- If No external force, the total momentum for a system is conserved.
  - 1
  - 2

1) Conserved

2) System

- Demo

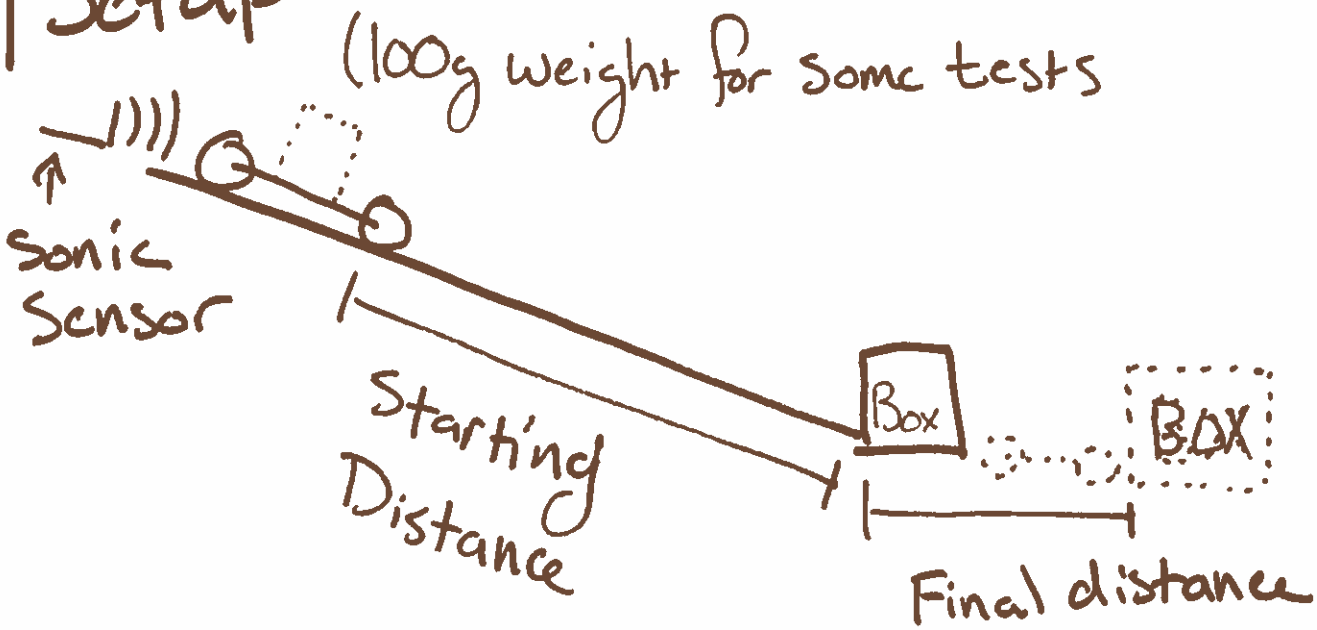
P=0, Nothing is moving.

P is still zero. Because the velocity is opposite!

Momentum Lab

Goal - See how speed and mass effect momentum.

Setup



- Release the car
- Measure how far it moves the box
- Get the velocity off the computer

1 Data

Empty Car: _____ kg || w/100 g: _____ kg

SD	Vel	Momentum	FD	Vel	Momentum	FD
200mm						
300mm						
400mm						
500mm						
600mm