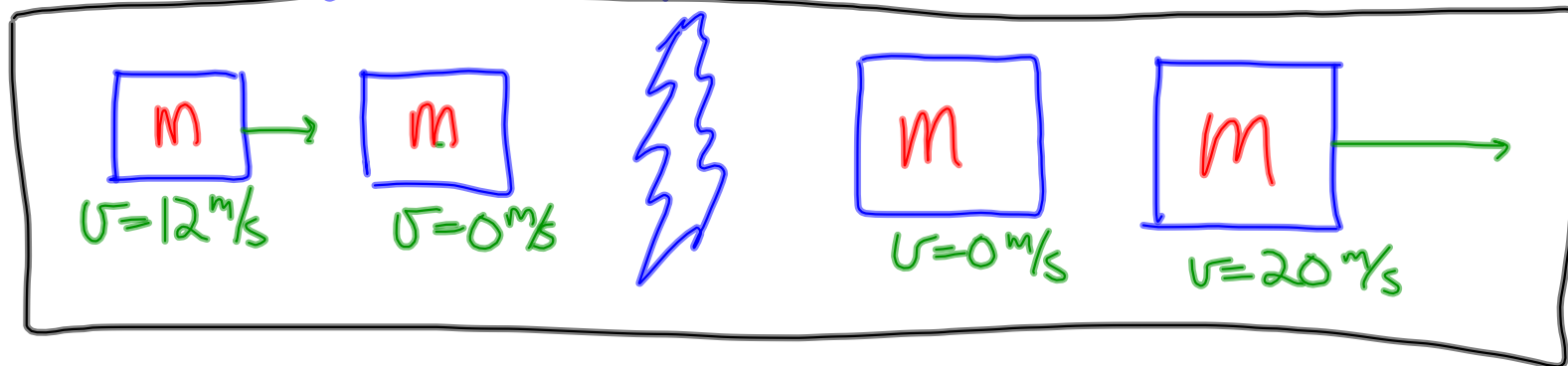


Solving Conservation of Momentum Problems:

- $p = m \cdot v$

· total momentum before the collision =
total momentum after the collision






Diagram illustrating a collision between two objects:

- Before collision:
 - Object 1: 500 kg, moving at 8 m/s
 - Object 2: 200 kg, at rest (0 m/s)
- After collision:
 - Object 1: 500 kg, at rest (0 m/s)
 - Object 2: 200 kg, moving at velocity v

A lightning bolt symbol indicates the collision event.

Part a:

- (a) (a) $m = 500 \text{ kg}$, $v = 8 \frac{\text{m}}{\text{s}}$
- (b) p
- (2) $p = m \cdot v$
- (3) $p = 500 \text{ kg} \cdot 8 \frac{\text{m}}{\text{s}}$
- (4) $p = \frac{500 \cdot 8}{1} = 4000 \frac{\text{kg} \cdot \text{m}}{\text{s}}$
- (5) $p = m \cdot v$
 $\frac{4000}{500} = \frac{500 \cdot v}{500}$
 $\sqrt{8} = v$

the same (arrow pointing from part a to part c)

Part c:

- (c) (a) $m = 200 \text{ kg}$, $p = 4000 \frac{\text{kg} \cdot \text{m}}{\text{s}}$
- (b) v
- (2) $p = m \cdot v$
- (3) $4000 \frac{\text{kg} \cdot \text{m}}{\text{s}} = 200 \text{ kg} \cdot v$
- (4) $\frac{4000}{200} = \frac{200 \cdot v}{200}$
 $v = 20 \frac{\text{m}}{\text{s}}$
- (5) $p = 200 \cdot 20 = 4000$