

\* MOMENTUM IS A VECTOR QUANTITY \*

Represent (+) for one direction; use (-) for the opposite!

These are  
the ones for  
your formula sheet

$$\left\{ \begin{array}{l} P = m v \\ F t = m \Delta v \quad (\text{Impulse}) \end{array} \right.$$

\* MOMENTUM IS ALWAYS CONSERVED (OVERALL & VECTORALLY)

$$M_1 v_1 + M_2 v_2 = M_1 v_1' + M_2 v_2' \quad \text{ELASTIC COLLISIONS}$$

$$M_1 v_1 + M_2 v_2 = (M_1 + M_2) v' \quad \begin{array}{l} \text{PERFECTLY} \\ \text{INELASTIC COLLISIONS} \end{array}$$

$$M v = \sum (m_1 v_1' + m_2 v_2' + m_3 v_3' \dots) \quad \text{EXPLOSIONS}$$

These 3 are just mathematical derivatives. You probably shouldn't need to write these down.

Why? These formulas only describe conservation of linear momentum!