Oblique Collisions

Colliding objects at an angle to one another.

Line joining centres at moment of collision as the i axis

NB forces are exerted along the i axis ⇒ j velocities do NOT CHANGE

Momentum is preserved in the i direction (moment of collision i axis)

Hence	Velocity before	Velocity after	mass
	$ai + bj$	$pi + bj$	m_1
	$ci + dj$	$qi + dj$	m_2

and NEL: $\frac{p-q}{a-c} = -e$ PCM: $m_1a + m_2c = m_1p + m_1q$

NB ↗ j velocities are ignored as they are unchanged.

ie for both consider only i velocities

Remember: sin & cos only used if you are not given resolved velocities.

You may be asked for the angle of the new path → can use

$$\text{Tan}\,\theta = \frac{m_1 - m_2}{1 + m_1 m_2}$$

where m_1 = slope of original path (j/i)

m_2 = slope of new path

[redacted]