Question 5   IMPACTS and COLLISIONS

This topic consists of 4 subsections

Direct impacts
Oblique impacts

Direct collisions
Oblique collisions.

You need to know:

law of conservation of momentum:

[In the absence of an external force in a certain direction, the
total momentum of a system in that direction remains constant]

$$m_1 u_1 + m_2 u_2 = m_1 v_1 + m_2 v_2 \qquad LCM$$

The impulse is a large force applied for a short time on a body (eg
hitting a ball). The impulse imparted on a body is the
change in its momentum.

$$\text{Impulse} = Ft = m\vec{v} - m\vec{u}$$

force   time

Newtons experimental law $\dfrac{\text{new relative velocity}}{\text{old relative velocity}}$ $\left\{ \dfrac{v_1 - v_2}{u_1 - u_2} = -e \right.$

NEL   coefficient of
                                                                        restitution

$e = 1$ if a collision is perfectly
                        elastic
$e < 1$ if not (usual)

set out work clearly!

for any question you will need/have

	mass	velocity before	velocity after
particle A	m_1	u_1	v_1
B	m_2	u_2	v_2

Also remember: potential energy $= mgh$

kinetic energy $= \frac{1}{2} mv^2$

conservation of energy: $mgh + \frac{1}{2} mv^2 = constant$.