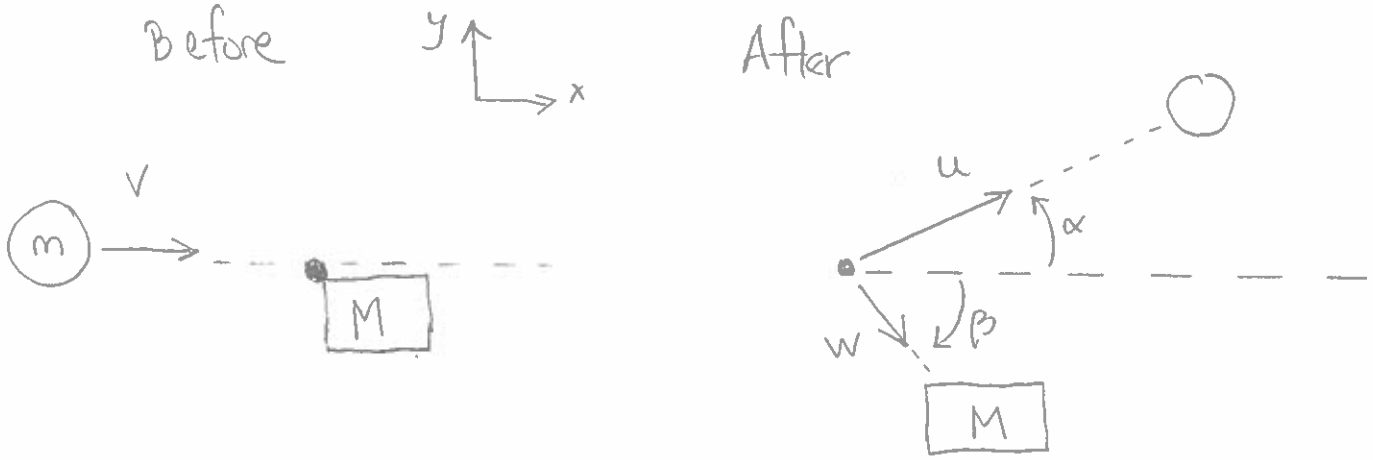

A hockey puck of mass $m = 0.4$ kg slides on frictionless ice at speed $V = 8.2 \frac{m}{s}$. It strikes a motionless brick of mass $M = 1.25$ kg. After the collision, both objects slide to the right: the puck at speed $u = 6.802 \frac{m}{s}$, at an angle $\alpha = 10.8^\circ$ above x-axis; the brick at speed $w = 0.634 \frac{m}{s}$ at some angle β below x-axis.

To find angle β, use conservation of momentum.

	Before			After	
obj	x	y	obj	x	y
puck	$+mV$	0	puck	$+mu\cos\alpha$	$+mu\sin\alpha$
brick	0	0	brick	$+Mw\cos\beta$	$-Mw\sin\beta$
total	$+mV$	0		$mu\cos\alpha + Mw\cos\beta$	$+mu\sin\alpha - Mw\sin\beta$

Look at momentum in the y-direction

Before		After
0	$=$	$mu\sin\alpha - Mw\sin\beta$

We can solve for the unknown angle β

$$\sin\beta = \frac{mu\sin\alpha}{Mw}$$

$$= \frac{(0.4\,\text{kg})\left(6.802\,\frac{\text{m}}{\text{s}}\right)\sin(10.8^\circ)}{(1.25\,\text{kg})\left(0.634\,\frac{\text{m}}{\text{s}}\right)}$$

$$= 0.643$$

$$\rightarrow \boxed{\beta = \sin^{-1}(0.643) = 40.0^\circ}$$