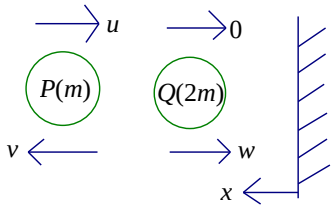
Q	Scheme	Marks	Notes
5(a)			
	Use of CLM (or equal and opposite impulses):	M1	correct no. of terms, dim correct, condone sign errors
	$mu = -mv + 2mw$	A1	Or equivalent
	Use of NEL:	M1	correct way round, condone sign errors
	$eu = v + w$	A1	Or equivalent
	Solve for v	DM1	Dependent on both preceding M marks
	$v = \frac{u(2e-1)}{3}$	A1	Or equivalent
	v consistently in the wrong direction gives $v = \frac{u(1-2e)}{3}$		Mark as a misread and allow M1A0M1A0M1A1, but full marks if they later take account of the change in direction to give the correct final answer
	If the direction of v is correct in one equation and incorrect in the other then mark as seen		
		(6)	
5(b)	NEL at the wall: $x = \frac{1}{3}w$	B1	Allow + / -: they might be working with velocities
	$w = \frac{u(e+1)}{3}$	B1	Or equivalent expression for w
	$\frac{1}{3} \times \frac{u(e+1)}{3} > \frac{u(2e-1)}{3}$	M1	use of *their* $x >$ *their* v
	$e < \frac{4}{5}$	A1	cao
	$\frac{1}{2} < e < \frac{4}{5}$	A1	cao
		(5)	
		(11)	