6(a)	At B: $mg\cos 60° = \frac{mv^2}{r}$	M1A1A1
	$v = \sqrt{\frac{rg}{2}}$ *	A1 (4)
(b)	$\frac{1}{2}m\left(u^2 - v^2\right) = 2mgr\sin 30°$	M1A1A1
	$u^2 = 4gr \times \frac{1}{2} + \frac{rg}{2}$	
	$u = \sqrt{\frac{5rg}{2}}$	A1 (4)
(c)	$0^{(2)} = \left(v\sin 60\right)^2 - 2gh$	M1A1
	$h = \frac{3v^2}{8g} = \frac{3r}{16}$	A1
	Height above $C = \frac{3r}{16} + r + r\cos 60°$	M1
	$= \frac{27}{16}r$	A1 (5)
		[13]

(a)	
M1	Attempt at equation of motion along the radius, with weight resolved and acceleration in either form. If R is included, it must be set to zero before this mark is awarded.
A1A1	Fully correct equation. -1 for each error. Acceleration must be in correct form.
A1*	Given answer reached from fully correct working. There must be at least one line of working between At B: $mg\cos 60° = \frac{mv^2}{r}$ and the given result.
(b)	
M1	Energy equation with 2 KE terms and a change in GPE. Use of SUVAT scores M0. The work might be seen in (a), but must be used in (b).
A1	Correct GPE or change in KE.
A1	Fully correct equation.
A1	Correct expression for u.
(c)	
M1	Complete SUVAT method to find height gained after leaving sphere. Initial velocity must be resolved. If energy used, they must take account of the fact that there is still KE at the highest point.
A1	Fully correct equation.
A1	Correct height gained.
M1	Complete method to find height above C, by adding 3 distances. Independent of previous M mark, as long a dimensionally correct height gained has been found.
A1	$\frac{27}{16}r\left(=1.6875r\right)$ **cso**