Question Number	Scheme	Marks
8.	**N.B.** In parts (a) and (c), $g = 9.8$ could appear in the working but final answers must be using g. In (b), $g = 9.8$ could be used in their answer. In (d), $g = 9.8$ could appear throughout in the working. **N.B.** For any equation of motion, if they use an incorrect mass in the 'ma' term, award M0 for the equation. However, if the correct mass has been used in (c), treat an error in the 'ma' term in (d) as a slip.	
8(a)	$R = 2mg\cos\alpha$	M1A1
	$F = \frac{11}{36} \times 2mg \times \frac{12}{13} = \frac{22mg}{39}$ *	A1* (3)
8(b)	$3mg - T = 3ma$	M1A1 (2)
8(c)	$T - \frac{22mg}{39} - 2mg\sin\alpha = 2ma$ $\quad (T - \frac{4mg}{3} = 2ma)$ **OR:** $3mg - \frac{22mg}{39} - 2mg\sin\alpha = 5ma$	M1A1
	Solve for a in terms of g **N.B.** Must reach $a = kg$ from **their** equations	M1
	$a = \frac{1}{3}g$ *	A1* (4)
8(d)	$v^2 = \frac{2gh}{3}$	B1
	$-\frac{22mg}{39} - 2mg\sin\alpha = \pm 2ma$ **OR** PE Gain = $2mgd\sin\alpha$	M1
	$\pm\frac{2g}{3} = a$ $\quad =\ \frac{10mgd}{13}$	A1
	$0 = \frac{2gh}{3} - 2 \times \frac{2g}{3} \times d$ $\frac{22mgd}{39} = \frac{1}{2} \times 2m \times \frac{2gh}{3} - \frac{10mgd}{13}$	M1
	$d = \frac{1}{2}h$ $\quad d = \frac{1}{2}h$	A1
	Total distance = $\frac{1}{2}h + h = \frac{3}{2}h$	A1 ft (6)
		(15)