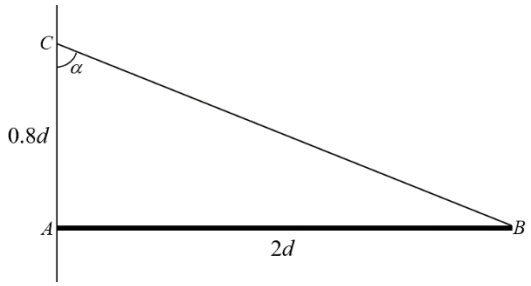
QUESTION NUMBER	SCHEME	MARKS
6		
6(a)	A complete method to find an equation in *T*, *m*, *g*, *k* (and α).	M1
	E.g. Moments about *A* $(T\cos\alpha\times 2d)=(mg\times d)+(kmg\times 2d)$	A1, A1
	$T=\frac{mg\sqrt{29}}{4}(2k+1)$ *	A1*
		(4)
6(b)	Vertical equation	M1
	Correct equation Eg Vertical equilibrium $Y+T\cos\alpha=mg+kmg$	A1
	Horizontal equation	M1
	Correct equation Eg Horizontal equilibrium $X=T\sin\alpha$	A1
	Use of $\tan\theta=\frac{Y}{X}$ to form an equation in *k* only	M1
	$k=\frac{11}{10}$ or 1.1	A1
		(6)
		(10)
	Notes for question	
6(a)		
M1	A complete method to find an equation in *T*, *m*, *g*, *k* and α or size of angle at *B,say* β. Dimensionally correct with all required terms. Condone sign errors and sin/cos confusion. '*g*' missing, count as one accuracy error	
A1	Correct unsimplified equation(s) with at most one error.	
A1	Correct unsimplified equation(s).	
A1*	Complete method to substitute trig and correctly obtain the given answer. At least one line of working between the equation and the given answer. Note: $\cos\alpha=\frac{2}{\sqrt{29}}$, $\sin\alpha=\frac{5}{\sqrt{29}}$, $\tan\alpha=\frac{5}{2}$ $\sin\beta=cos\alpha$, $\cos\beta=\sin\alpha$, $\tan\beta=\frac{2}{5}$ Allow factor as (2*k*+1) or (1+2*k*)	
6(b)		

M1	Resolve vertically. Dimensionally correct with all terms required. Condone sign errors and sin/cos confusion. Must be using correct angle	
A1	Correct unsimplified equation. Allow for Y downwards ie +/-Y	
M1	Resolve horizontally. Dimensionally correct with all terms required. Condone sign errors and sin/cos confusion. Must be using correct angle.	
A1	Correct unsimplified equation.	
M1	Use of $\tan\theta = \frac{Y}{X}$ to form an equation in k only, so +/-1/8 or +/-8 must have been used. Allow for Y downwards ie -Y/X, consistent with first use of their Y	
A1	Correct value for k. Must be **exact**.	
	N.B For X and Y allow use of $R\cos\theta$ and $R\sin\theta$ or N and μN	