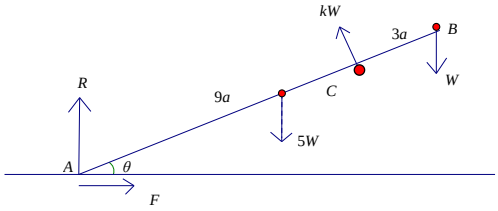
Question	Scheme	Marks
6(a)		
	Moments about A	M1
	$5W\times 6a\cos\theta + W\times 12a\cos\theta = 9akW$ $\left(30\times\frac{12}{13}+12\times\frac{12}{13}=9k\right)$	A1 A1
	$\Rightarrow k=\frac{56}{13}$ *	A1*
		(4)
6(b)	First relevant equation	M1
	Correct unsimplified equation Relevant equations: • Vert: $R+kW\cos\theta = 6W$ $\left(R=\frac{342}{169}W\right)$ • Horiz: $F = kW\sin\theta$ $\left(F=\frac{280}{169}W\right)$ • // to AB: $F\cos\theta + R\sin\theta = 6W\sin\theta$ • Perp to AB: $kW + R\cos\theta = 6W\cos\theta + F\sin\theta$ • M(G): $R\cos\theta\times 6a + W\cos\theta\times 6a = F\sin\theta\times 6a + kW\times 3a$ • M(C): $W\cos\theta\times 3a + R\cos\theta\times 9a = 5W\cos\theta\times 3a + F\sin\theta\times 9a$ • M(B): $kW\times 3a + R\cos\theta\times 12a = 5W\cos\theta\times 6a + F\sin\theta\times 12a$	A1
	Second relevant equation	M1
	Correct unsimplified equation	A1
	Use of $F=\mu R$ to form an equation in μ only	DM1
	$\mu=\frac{280}{342}\left(=\frac{140}{171}\right)=0.8187....$	A1
		(6)
		(10)
	Notes	
	Note that an extra g in a resolution or moments equation is an accuracy error and not a method error.	
6(a)		
M1	Complete method eg moments about A. All required terms present and no extra. Dimensionally correct, product of perpendicular force and distance (a and W present throughout). Condone sign errors and sin/cos confusion. Condone R_c (or similar) instead of kW.	
A1	Unsimplified equation with at most one error	
A1	Correct unsimplified equation	
A1*	Obtain given answer from correct working. Trig replaced and R_c (or similar) replaced in terms of k. At least one line of working required	

	between the equation and the given answer. Do not accept embedded value for *k*.	
6(b)		
M1	First relevant equation. All required terms present and no extra. Dimensionally consistent. Condone sign errors and sin/cos confusion.	
A1	Correct unsimplified equation. Trig does not need to be replaced. Condone R_c (or similar) instead of kW.	
M1	Second relevant equation. To be relevant it must be possible to use with the first equation to find μ (at least one equation must be a horizontal, vertical, parallel or perpendicular resolution). All required terms present and no extra. Dimensionally consistent. Condone sign errors and sin/cos confusion.	
A1	Correct unsimplified equation. Trig does not need to be replaced. Condone R_c (or similar) instead of kW.	
DM1	Depending on the two previous M marks. Use of $F = \mu R$ to reach $\mu = \ldots$	
A1	$\frac{280}{342}\left(=\frac{140}{171}\right) = 0.8187....$ Accept 0.82 or better	