3a	<table><tr><td></td><td>square</td><td>triangle</td><td>circle</td><td>T</td></tr><tr><td>mass</td><td>36</td><td>8</td><td>π</td><td>$28-\pi$</td></tr><tr><td>c from AD</td><td>$3a$</td><td>$\frac{7}{3}a$</td><td>$4a$</td><td>d</td></tr></table>		
	Mass ratio	B1	
	Distances from AD or a parallel axis	B1	
	M(AD or parallel axis):	M1	Moments equation. Need all terms and dimensionally correct. Condone sign errors.
	$36\times 3a-8\times\frac{7}{3}a-\pi\times 4a=(28-\pi)d$	A1	Correct unsimplified equation for their parallel axis
	$\left(108a-\frac{56}{3}a-4\pi a=(28-\pi)d\right)$		
	$d=\frac{324-56-12\pi}{3(28-\pi)}a=\frac{4(67-3\pi)}{3(28-\pi)}a$ *	A1*	Obtain **given answer** from correct working
			Distance from BC is $\frac{(236-6\pi)a}{3(28-\pi)}$ Allow 4/5 if seen.
		(5)	
3b	M(A): $W\times\frac{4(67-3\pi)}{3(28-\pi)}a=kW\times 6a$ 0r resolve vertically and use M(G), where G is the centre of mass, $T_A+kW=W$ $T_A\left(\frac{4(67-3\pi)}{3(28-\pi)}a\right)=kW\left(6a-\frac{4(67-3\pi)}{3(28-\pi)}a\right)$	M1	Complete method to form an equation in k and W only Dimensionally correct but condone use of incorrect distsance(s)
		A1	Correct unsimplified equation $\left(\text{NB }\frac{4(67-3\pi)}{3(28-\pi)}a=3.088a\right)$
	$k=0.51$	A1	Q asks for 2dp
		(3)	
		[8]	