Q	Mark Scheme	Marks	Marking guidance
6 (a)	M(*PV*)	M1	Allow use of a parallel axis. Terms dimensionally consistent. Could be seen as part of a vector equation. Condone error(s) in distance(s).
	$a\times 2ka^2+\left(2a+\frac{1}{2}ka\right)2ka^2=\bar{x}\times\left(2ka^2+2ka^2\right)$	A1	Correct unsimplified equation
	$2\bar{x}=a+2a+\frac{1}{2}ka \Rightarrow \bar{x}=\frac{6+k}{4}a$ *	A1*	Obtain **given answer** from correct working
		3	
6 (b)	M(*PR*)	M1	Allow use of a parallel axis. Terms dimensionally consistent. Could be seen as part of a vector equation in (a) but needs to be used here to score mark(s) in (b). Condone error(s) in distance(s). If working from *VU* they might assume that c of m of *QRST* lies on their axis. So long as they say that this is what they have done (e.g. in a table of values) this can score M1A0A0M1A1ftA0.
	$\frac{1}{2}ka\times 2ka^2+a\times 2ka^2=\bar{y}\times 4ka^2$	A1	Correct unsimplified equation
	$\bar{y}=\frac{k+2}{4}a$	A1	Correct answer $(\pm)$ seen or implied Accept distance from $VU=\pm\frac{3k-2}{4}a$ Or distance from TS = $\pm\frac{6-k}{4}a$
	Use angle to form equation in *k*	M1	Correct use of given ratio. Allow reciprocal
	$\frac{7}{15}=\frac{\bar{y}}{\bar{x}}=\frac{(k+2)a}{4}\times\frac{4}{(6+k)a}$	A1	Correct unsimplified equation using given $\bar{x}$ and their $\bar{y}$ e.g. $\frac{ka-\bar{y}_{VU}}{\bar{x}}$ or $\frac{2a-\bar{y}_{TS}}{\bar{x}}$
	$\Rightarrow k=\frac{3}{2}(=1.5)$	A1	Correct only
		6	
		(9)	