3a	<table><tr><td></td><td>area</td><td>distance from *AE*</td></tr><tr><td>rectangle</td><td>$48a^2$</td><td>$4a$</td></tr><tr><td>triangle</td><td>$18a^2$</td><td>$8a-2a\left(=6a\right)$</td></tr><tr><td>lamina</td><td>$30a^2$</td><td></td></tr></table>	B1 B1	Mass ratio correct Distances from *AE* (or parallel axis) correct
	M(*AE*)	M1	Allow use of a parallel axis. The moments equation should include *a* but condone if the mass ratio does not include a factor of a^2. Dimensionally correct.
	$48a^2\times 4a-18a^2\times 6a=30a^2\bar{x}$	A1	Correct unsimplified equation for their axis. Accept as part of a vector equation.
	$\bar{x}=\frac{84}{30}a=\frac{14}{5}a$ *	A1*	Obtain **given answer** from correct working (including correct use of *a*)
			If they take moments about *BD* they get $d=5.2a$ Allow B1B1M1A1A0 if they get this far.
		5	
3b	Find trig ratio of a relevant angle	M1	Correct use of trig.
	$\tan\theta^\circ=\frac{3a}{2.8a}$	A1	Correct equation for the required angle. (DO NOT ISW: If they obtain 47 and then use 90 – 47 = 43 they score M1A0A0)
	$\theta=47$	A1	The Q asks for a whole number of degrees. 0.82 radians scores M1A1A0
		3	
		(8)	