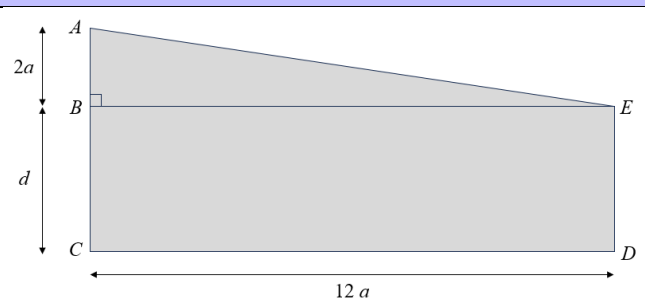
Question number	Scheme	Marks
2		
2(a)	<table><tr><td></td><td>Mass ratio</td><td>Distance from AC</td></tr><tr><td>Triangle</td><td>$12a^2$</td><td>$4a$</td></tr><tr><td>Rectangle</td><td>$12ad$</td><td>$6a$</td></tr></table>	B1 mass B1 dist
	Moments about AC or a parallel axis	M1
	$(12a^2 \times 4a) + (12ad \times 6a) = (12a^2 + 12ad)\bar{x}$	A1
	$\bar{x} = \dfrac{2a(2a+3d)}{(a+d)}$ *	A1*
		(5)
2(b)	$\bar{x} = \dfrac{28}{5}a$	B1
	Moments equation about A	M1
	$\left(W \times \dfrac{28}{5}a\right) + \left(\dfrac{W}{2} \times 12a\right) = F \times 6a$	A1
	$F = \dfrac{29}{15}W$	A1
		(4)
		(9)

	Notes for question	
(a)		
B1	Correct mass ratios	
B1	Correct distances from AC.	
M1	Moments taken about AC or a parallel axis. Dimensionally correct equation. All terms required.	
A1	Correct unsimplified equation. If mass ratios are simplified before taking moments: $4a^2 + 6ad = (a+d)\bar{x}$ Incorrect use of brackets will be penalised in final A mark.	
A1*	Correctly obtain given answer from completely correct working, including use of brackets. At least one stage of simplification must be seen in working. Final answer must be a correctly factorised fraction eg allow $(d+a)$ for $((a+d)$ etc	
(b)		
B1	$\bar{x} = \frac{28}{5}a$ .This mark can be awarded for a correct substitution of 4a in to a $\bar{x} = \frac{2a(2a+3d)}{(a+d)}$. ISW subsequent working if incorrect result occurs.	
M1	Complete method to find an equation in F, W (and a) Dimensionally correct equation. All terms required. $d = 4a$ must be substituted.	
A1	Correct unsimplified equation.	
A1	Correct answer, accept $1.9W$ or better 1. 9333..W accept $\frac{58}{30}W$	
	N.B. In part (b) If $d=4a$ is not used, then zero marks in this part.	