7a	Possible equations: $\updownarrow R+3R\left(=4R\right)=60g$ M(A), $60gx=R\times a+3R\times 6a$ M(B), $60g(8a-x)=R\times 7a+3R\times 2a$ M(C), $60g(x-a)=3R\times 5a$ M(D), $60g(6a-x)=R\times 5a$	M1A1 M1A1	Two equations required. For each equation, M1 for correct no. of terms, dim correct but condone sign errors. A1 for a correct unsimplified equation. Consistent omission of g could score full marks. Inconsistent omission of g is an A error. All four of these marks could be scored for consistent use of another unknown length which is clearly defined e.g. on a diagram **N.B.** M marks only available if using R and $3R$ oe but allow if wrong way round. For vertical resolution, can score M1A1, even if wrong way round.
	S.C. M(G), $R(x-a)=3R(6a-x)$	M2A2	-1 each error
	$x=\dfrac{19a}{4}$ oe	A1	Or equivalent
		(5)	
7b			
	Possible equations: ($\uparrow$), $60g+Mg=S+S$ M(A), $60gx+Mg\times 2a=S\times a+S\times 6a$ M(B), $60g(8a-x)+Mg\times 6a=S\times 7a+S\times 2a$ M(C), $60g(x-a)+Mga=S\times 5a$ M(D), $60g(6a-x)+Mg\times 4a=S\times 5a$ M(G), $S(x-a)=S(6a-x)+Mg(x-2a)$	M1A1ft M1A1ft	Two equations in two unknowns (M and S) required. For each equation, M1 for correct no. of terms, dim correct but condone sign errors. A1ft for a correct unsimplified equation, follow their x. x must be substituted to earn the A marks. Consistent omission of g could score full marks. Inconsistent omission of g is an A error.
	$M=50$	A1	Exact answer only.
		(5)	
		[10]	