Question Number	Scheme	Marks
3(a)	M(D), $mg \times 1.2 = 30g \times 0.8$	M1 A1
	Other possible equations: $(\uparrow)\ R = mg + 30g$ M(A) $2.5mg + 30g \times 4.5 = 3.7R$ M(G) $30g \times 2 = 1.2R$ M(C) $mg \times 2 = 0.8R$ M(B) $2.5mg + 30g \times 0.5 = 1.3R$	
	m = 20 (kg)	A1
	N.B. Allow an inequality if they state m = 20 (kg) at the end	(3)
3(b)	M(D), $Xg \times 3.7 + 20g \times 1.2 = 30g \times 1.3$ **N.B.** Allow inequality $\geq$…the correct way round for M1A1ft	M1A1**ft**
	Other possible equations: $(\uparrow)\ S = mg + 30g + Xg$ M(A) $2.5mg + 30g \times 5 = 3.7S$ M(G) $30g \times 2.5 = 1.2S + Xg \times 2.5$ M(B) $2.5mg + Xg \times 5 = 1.3S$ where m is their answer from (a).	
	$X = \frac{150}{37}$, 4.1 or better (4.05405…)	A1
		(3)
3(c)	The mass of the block is concentrated at a point. oe	B1
	N.B. Must mention either mass or weight and 'acting at a point' or 'concentrated at a point'.	(1)
		(7)
	Notes for question 3	
3(a)	M1 Complete method to give an equation in m only. Allow M1 if they use weight instead of mg **N.B.** If they don't use M(D), e.g. ($\uparrow$) and M(A), they will need to eliminate the reaction at D to obtain the M mark. Each equation used must have the correct no. of terms and be dimensionally correct. M0 if they don't have the reaction acting at D.	
	A1 Correct equation	
	A1 cao	
3(b)	M1 Complete method to give an equation in X only. Allow M1 if they use weight instead of Xg **N.B.** If they don't use M(D), e.g. ($\uparrow$) and M(A), they will need to eliminate the reaction at D to obtain the M mark. Each equation used must have the correct no. of terms and be dimensionally correct. M0 if they don't have the reaction acting at D.	
	A1**ft** Correct equation. Follow through on their 20	
	A1 cao	
3(c)	B1 Any equivalent statement.	