

Question Number	Scheme	Marks
4(a)	(↑) $R = 5g - 14 \sin 30^\circ$	M1 A1
	$R = 42 \text{ (N)}$	A1
	(Max Friction =) $\frac{3}{7} \times 42 = 18 \text{ (N)}$ (18 only, with no working can score this M mark)	M1
	Horiz cpt of $P = 14 \cos 30^\circ = 12.124\dots$ and $12 < 18$ (their max friction) They must be comparing with a maximum friction i.e. the word ' maximum ' or must have been clearly stated somewhere. N.B. M0 if they state or imply that the friction acting on the block is 18 N.	M1
	Friction = 12 or better (N) and block doesn't move	A1
		(6)
4(b)	(↑) $P \sin 30^\circ + S = 5g$	M1A1
	(→) $P \cos 30^\circ = \frac{3}{7} S$ (Allow M1A0 if they use the max friction from (a) or $\frac{3}{7} \times$ wrong value for S) (allow M1A0 for $P \cos 30^\circ = F$)	M1A1
	Solve for P	DM1
	$P = 19$ or 19.4 (N)	A1
		(6)
		(12)
	Notes for question 4	
4(a)	M1 Correct no. of terms, condone sin/cos confusion and sign errors	
	A1 Correct equation in R only .	
	A1 Correct value (seen or implied)	
	M1 Use of $F = \frac{3}{7} R$ with their R substituted.	
	M1 Condone sin/cos confusion	
	A1 cao and any equivalent correct statement and justification	
4(b)	M1 Correct no. of terms, condone sin/cos confusion and sign errors	
	A1 Correct equation	
	M1 Correct no. of terms, condone sin/cos confusion and sign errors	
	A1 Correct equation	
	DM1 Dependent on both M marks; must be solving two equations in P and one other unknown	
	A1 cao	