Question Number	Scheme	Marks
2.	$T = mg\cos\theta$	M1A1
	$T = \dfrac{2mg\left(\dfrac{21}{10}a - ka\right)}{ka}$	M1A1
	$\dfrac{4}{5}mg = \dfrac{2mg\left(\dfrac{21}{10}a - ka\right)}{ka}$	dM1
	$k = \dfrac{3}{2}$ or 1.5	A1
		(6)
	Notes	
M1	Resolve parallel to the string, correct no. of terms, condone sign errors and sin/cos confusion (**or** resolve in two directions and eliminate the unknown force **or** use trig on a right-angled triangle of forces) to give an equation in T, mg and θ **only**	
A1	Correct equation. Trig does not need to be substituted.	
M1	Use Hooke's Law with correct structure.	
A1	Correct equation	
dM1	Substitute trig and eliminate T to produce equation in k only, dependent on previous M's. If x is used for extension, should see $x = \dfrac{2k}{5}a \rightarrow ka + \dfrac{2k}{5}a = \dfrac{21}{10}a$	
A1	cao	
ALT 1	**First M1A1**	
M1A1	Complete method to form an equation in T and θ Vert: $mg = T\cos\theta + F\sin\theta$ Horiz: $F\cos\theta = T\sin\theta$ Eliminate F eg $\dfrac{\sin\theta}{\cos\theta} = \dfrac{mg - T\cos\theta}{T\sin\theta}$	