4a	Resolve perpendicular to the direction of motion to form an equation in α only. **OR** sine rule on a vector triangle.	M1	Dimensionally correct. Both forces resolved. Condone sign errors. Condone sine / cosine confusion but M0 for $800\cos 25° + 500\cos \alpha° = 0$ if **clearly** resolving in the direction of motion.
	$800\sin 25° = 500\sin \alpha°$ oe	A1	Correct unsimplified equation
	43 or better (must be correctly rounded to however many figs they choose)	A1	$\alpha = 42.5465...$ is A0
		(3)	
4b	Use $F = ma$ parallel to the direction of the motion, to form an equation in α and a only. **N.B.** The resultant of the two tensions may be found using the sine rule or cosine rule on a vector triangle.	M1	Dimensionally correct. Both forces resolved. Condone sine / cosine confusion. Condone sign errors. All relevant terms. Condone 15 or incorrect zeros for the mass. **N.B**. An extra g in a resolution is counted as an A error not an M error.
	$800\cos 25° + 500\cos \alpha° - 750 = 15000a$ **OR** $\frac{500\sin(180^o - 25^o - \alpha^o)}{\sin 25^o} - 750 = 15000a$ **OR** $\frac{800\sin(180^o - 25^o - \alpha^o)}{\sin \alpha^o} - 750 = 15000a$ **OR** $F - 750 = 15000a$ where $F = \sqrt{800^2 + 500^2 - 2\times 800\times 500\cos(180^\circ - 25^\circ - \alpha^\circ)}$	A1 A1	Unsimplified equation with at most one error. Correct unsimplified equation. α does not need to be substituted. **N.B**. If they haven't attempted part (a) and use a 'random' numerical value for α, can score max A1A0. **N.B**. Allow a replaced by $-a$
	Accept 0.023 $\left(\text{m s}^{-2}\right)$ or better, (must be correctly rounded to however many figs they choose)	A1	$a = 0.02289...$ is A0 **N.B.** Penalise the use of … in their answer, ONCE for the question.
		(4)	
		(7)	