Question		Answer	Marks	AO	Guidance
13	(a)	F Sg N 5g N	B1 B1 B1 B1	1.1b 1.1b 1.1b 1.1b	(Each force must have correct direction) Matching tensions on the sphere and the block (may also include tensions on the pulley) Normal reaction. Allow without label or $8g \cos 15^\circ$ used Friction in the correct direction and labelled This could be $0.3 \times 8g \cos 15^\circ$ oe Both weights correct. Do not award if weight and its components shown together (unless dotted or similar) or any other extra forces
			[4]		
13	(b)	Sphere (downwards positive) 5g - T = 5a	M1 A1	1.1a 1.1b	Newton's second law allow sign errors All correct – accept $49 - T = 5a$ Any form
			[2]		
13	(c)	$R = 8g\cos 15^{\circ}$ $F = 0.3R = 2.4g\cos 15^{\circ}$ Newton's second law for the block	B1 M1	3.1b 3.4	FT their <i>R</i>
		$T - 8g\sin 15^\circ - F = 8a$	M1 A1	1.1a 1.1b	Allow one missing or incorrect force, must be dimensionally correct. FT their F All correct FT their F
		Add equations of motion	M1	1.1a	Attempt to eliminate T
		$5g - 8g\sin 15^\circ - 2.4g\cos 15^\circ = 13a$			This equation with one missing or incorrect force implies the previous M1A0M1
		<i>a</i> = 0.461	A1	1.1b	
			[6]		