Q	Scheme	Marks	Notes
4(a)	$F = \frac{1}{7} \times mg\cos\alpha \quad \left(= \frac{1}{7} \times mg \times \frac{4}{5}\right)$	M1	condone sin/cos confusion
	$= \frac{4mg}{35}$ *	A1*	obtain **given answer** from correct working Correct trig value must be seen as it is a given answer – could be against the Q
		(2)	
4(b)	Energy equation: PE gain + WD against Fr = KE lost or equivalent	M1	NB: The question tells them to use work-energy. Need all terms, dimensionally correct but condone sign errors. Condone sine / cosine confusion
	$\frac{4mgd}{35} + mgd\sin\alpha = \frac{1}{2}m \times 10ag$ Or $\frac{4mgd}{35} + mgd \times \frac{3}{5} = \frac{1}{2}m \times 10ag$	A1 A1	unsimplified equation with at most one error correct unsimplified equation
	d (= AB) = $7a$	A1	cao
		(4)	
4(c)	Energy equation	M1	NB: The question tells them to use work-energy. Need all terms, dimensionally correct but condone sign errors
	$\frac{4mg}{35} \times 14a = \frac{1}{2}m \times 10ag - \frac{1}{2}mV^2$ or $\frac{4mg}{35} \times 7a = mg \times 7a \times \frac{3}{5} - \frac{1}{2}mV^2$ or $\frac{4mg}{35} \times d = mg \times d \times \frac{3}{5} - \frac{1}{2}mV^2$	A1ft A1ft	unsimplified equation with at most one error, ft on their AB correct unsimplified equation Allow A1A1 if they have substitued for g
	$V = \sqrt{\frac{34ag}{5}}$	A1	accept $2.6\sqrt{ag}$, $\sqrt{6.8ag}$ or better. Accept $\sqrt{\frac{170ag}{25}}$
		(4)	
		(10)	