2.a	Equation of motion for car and trailer	M1	Need all terms. Dimensionally correct. Condone sin/cos confusion and sign errors.
	$F-300-150-\frac{200g}{20}-\frac{600g}{20}=0$ $\left(F-842=0\right)$	A1 A1	Unsimplified equation in P or F with at most one error Correct unsimplified equation in P or F Missing g is one accuracy error
	$\frac{1000P}{15}\left(-450-98-294=0\right)$	M1	Use of $P=Fv$ Allow with P or $1000P$
	$P=12.6$ or $P=13$	A1	3 s.f. or 2 s.f. only A final answer of 12600 (13000) scores 4/5 Condone 12600=12.6 (correct thinking without stating the units)
		[5]	
2b	KE lost = gain in GPE + WD against resistance	M1	Must be using work-energy principle for trailer only. Dimensionally correct. Correct terms and no extras. Condone sign errors and sin / cos confusion.
	$\frac{1}{2}\times 200\times 400=\frac{200}{20}gd+300d\left(=398d\right)$	A1 A1	Correct unsimplified equation in one variable with at most one error Correct unsimplified equation in one variable.
	$XY=d=101\ \left(100\right)$ (m)	A1	3 s.f. or 2 s.f. only
		[4]	
		(9)	