

Question 2 (Total 8 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$\mathbf{v} = \mathbf{u} + \mathbf{a}t$ $\mathbf{v} = (-7\mathbf{i} + \mathbf{j}) + (3\mathbf{i} + 4\mathbf{j})t$	M1	This mark is given for a method to find a vector expression for $\mathbf{v}$
	$= (-7 + 3t)\mathbf{i} + (1 + 4t)\mathbf{j}$	A1	This mark is given for finding a correct vector expression for $\mathbf{v}$
	$\frac{1 + 4T}{-7 + 3T} = \frac{3}{2}$	M1	This mark is given for a correct use of ratios as a method to find the value of T
	$3(-7 + 3T) = 2(1 + 4T)$ $T = 2 + 21 = 23$	A1	This mark is given for finding the correct value of T
(b)	$\mathbf{s} = \mathbf{u}t + \frac{1}{2}\mathbf{a}t^2$ $\mathbf{s} = (-7\mathbf{i} + \mathbf{j})t + \frac{1}{2}(3\mathbf{i} + 4\mathbf{j})t^2$	M1	This mark is given for a method to find a vector expression for the distance AB
	$= (-7t + \frac{3}{2}t^2)\mathbf{i} + (t + 2t^2)\mathbf{j}$	A1	This mark is given for finding a correct vector expression for the distance AB
	$AB = \sqrt{(-4)^2 + 36^2}$	M1	This mark is given for a method to find the distance AB using Pythagoras and substituting $t = 4$
	$= 36.2 \text{ m}$	A1	This mark is given for find a correct value for the distance AB