

Question		Scheme	Marks	AOs
4(a)		Horizontal motion: $64 = 4UT$	M1	3.3
		$UT = 16^*$	A1*	1.1b
			(2)	
4(b)		Vertical motion: use of $s = ut + \frac{1}{2}at^2$	M1	3.4
		$-9.6 = UT - 4.9T^2$	A1	1.1b
		Solve the two equations for U	M1	2.1
		$U = 7$	A1	1.1b
		Use Pythagoras to solve the problem: $V = \sqrt{(4U)^2 + U^2}$	M1	3.1b
		$V = 29$ or 28.9	A1	1.1b
			(6)	
4(c)		Any two of : allow for wind effects, spin of the ball, use a more accurate value for g	B1	3.5c
			B1	3.5c
			(2)	
(10 marks)				
4a	M1	Complete method to obtain an equation in U and T for horizontal motion, condone sign errors		
	A1*	Correct equation, correctly obtained.		
4b	M1	Complete method to obtain an equation in U and T for vertical motion, condone sign errors		
	A1	Correct equation, correctly obtained.		
	M1	Must be solving 2 equations		
	A1	cao		
	M1	U does not need to be substituted		
	A1	cao (no surds)		
4c	B1	One correct statement and at most one incorrect statement		
	B1	Two correct statements and no incorrect statements		