

Q	Marking instructions	AO	Mark	Typical solution
5(a)	Uses $S_n = 260$ for arithmetic sequence with $n=16$ to form a correct equation PI by $8(2a+15d) = 260$	1.1a	M1	$\frac{16}{2}(2a+(16-1)d) = 260$ $8(2a+15d) = 260$ $2(2a+15d) = 65$
	Completes rigorous argument with correct algebraic manipulation to show required result Must see at least one line of simplification after $8(2a+15d) = 260$ before given answer.	2.1	R1	$4a+30d = 65$
5(b)	Forms a second equation in a and d using $S_{60} = 315$ and solves simultaneously to find a or d	3.1a	M1	$30(2a+59d) = 315$ $20a+590d = 105$
	Obtains correct a and d	1.1b	A1	$a = 20$
	Uses their a and d to obtain their value of $S_{41} = 41a + 820d$ Follow through provided one of their a or d is correct.	1.1b	A1F	$d = -0.5$ $S_{41} = \frac{41}{2}(2 \times 20 - 40 \times 0.5) = 410$
5(c)	Explains that values of U_n are positive $n < 41$ Or Explains that values of U_n are negative for $n > 41$ Or Uses quadratic manipulation or differentiation of formula for S_n to obtain $n = 40.5$ CSO	2.4	M1	The terms before the 41 st term are all positive. The terms after the 41 st term are all negative so the sum of the first 41 terms must be a maximum value.
	Completes a valid argument explaining all terms positive before 41 and negative after 41 Or Completes argument linking 40.5 with the sum to 40 terms and the sum to 41 terms. CSO	2.1	R1	
Total			7	