International GCSE Further Pure Mathematics – Paper 1 mark scheme

Question number	Scheme	Marks
1 (a) (i)	$a + d + a + 8d = 0$ $\quad a + 3d + a + 5d + a + 9d = 14$ Solve simultaneously $d = 4$	M1 M1 A1
(ii)	$a = -18$	A1 (4)
(b)	$\frac{3n}{2}[48 + 6(n-1)] = \frac{2n}{2}[48 + 6(2n-1)]$ $3n(42 + 6n) = 2n(42 + 12n) \Rightarrow 6n^2 - 42n = 0$ $6n(n-7) = 0 \Rightarrow n = [0,\ 7]$ $n = 7$	M1 A1 A1 M1 A1 (5)
		[9]

Part	Mark	Additional Guidance
(a)	M1	For writing down both correct expressions in terms of a and d $a + d + a + 8d = 0$ $\quad$ $a + 3d + a + 5d + a + 9d = 14$
	M1	For attempting to solve their simultaneous equations for a and d $2a + 9d = 0$ $3a + 17d = 14$
	A1 (i)	For $d = 4$ * **This is a show question – there must be no errors for the award of this mark**
	B1 (ii)	For $a = -18$ **This is an A mark in Epen**
(b)	M1	For the **correct** use of the **correct** summation formula on **one of** the LHS or the RHS of the following equation. $\frac{3n}{2}\left(2\times 24 + 6\left[n-1\right]\right) = \frac{2n}{2}\left(2\times 24 + 6\left[2n-1\right]\right)$ No simplification is required for this mark.
	A1	For a fully correct equation as shown above – simplified or unsimplified
	A1	For reaching a correct 2TQ equation in n $126n + 18n^2 = 84n + 24n^2 \Rightarrow 6n^2 - 42n = 0$
	M1	For attempting to solve **their** quadratic (See General Guidance for the definition of an attempt) $6n^2 - 42n = 0 \Rightarrow 6n\left(n-7\right) = 0 \Rightarrow n = \left[0,\ 7\right]$
	A1	$n = 7$ Condone the value of 0 for this mark
	ALT	
	M1	For the **correct** use of the **correct** summation formula on **one of** the LHS or the RHS of the following equation. $\frac{3n}{2}\left(2\times 24 + 6\left[n-1\right]\right) = \frac{2n}{2}\left(2\times 24 + 6\left[2n-1\right]\right)$ No simplification is required for this mark.
	A1	For a fully correct equation as shown above – simplified or unsimplified
	A1	Divides through n to reach a linear equation to give $6n = 42$ oe
	M1	Solves their linear equation in n
	A1	$n = 7$