

1	i	10+20+30+40+50+60		or $\frac{6}{2}(2 \times 10 + 5 \times 10)$ or $\frac{6}{2}(10 + 60)$	1
	iB	correct use of AP formula with $a = 10$ and $d = 10$	M1		
		$n(5 + 5n)$ or $5n(n + 1)$ or $5(n^2 + n)$ or $(5n^2 + 5n)$	A1		
		$10n^2 + 10n - 20700 = 0$ 45 c.a.o.	M1 A1	Or better	4 1
	iiA	4			
	iiB	£2555	2	M1 for $5(1 + 2 + \dots + 2^8)$ or $5(2^9 - 1)$ o.	2
	iiC	correct use of GP formula with $a = 5, r = 2$	M1		
		$5(2^n - 1)$ o.e. = 2621435	DM1	"S" need not be simplified	
		$2^n = 524288$ www	M1		
		19 c.a.o.	A1		4

2	(i) $5 \times 10^{-3}, 0.0054$ or $\frac{27}{5000}$	1		
	(ii) www	2	M1 for $S = 5.4 / (1 - 0.1)$	3

3	$a + 10d = 1$ or $121 = 5.5(2a + 10d)$ $5(2a + 9d) = 120$ o.e. $a = 21$ s.o.i. www and $d = -2$ s.o.i. www 4th term is 15	M1 M1 A1 A1 A1	or $121 = 5.5(a + 1)$ gets M2 eg $2a + 9d = 24$	5
----------	---	----------------------------	--	---

4	ai	13	1	M1 for attempt at AP formula ft their a , d or for $3 + 5 + \dots + 21$ M1 for $\frac{1}{6} \times \left(\frac{5}{6}\right)^3$ If not specified, must be in right order	1
	aii	120	2		2
	bi	$\frac{125}{1296}$	2		2
	ii	$a = 1/6, r = 5/6$ s.o.i. $S_{\infty} = \frac{\frac{1}{6}}{1 - \frac{5}{6}}$ o.	1+1 1		3
	iii	$\left(\frac{5}{6}\right)^{n-1} < 0.006$ $(n-1)\log_{10}\left(\frac{5}{6}\right) < \log_{10} 0.006$ $n-1 > \frac{\log_{10} 0.006}{\log_{10}\left(\frac{5}{6}\right)}$ $n_{\min} = 30$ Or $\log(1/6) + \log(5/6)^{n-1} < \log 0.001$ $(n-1)\log(5/6) < \log(0.001/(1/6))$	M1 M1 DM1 B1 M1 M1		4

5	$r = 0.2$	3	M1 for $10 = 8/(1 - r)$, then M1 dep't for any correct step	3
---	-----------	---	---	---

6	(i)	3, 8, 13, 18	B1	Ignore extras Use of $a + (n-1)d$ $u_{51} = 253$ $u_{100} = 498$ $u_{50} = 248$ $u_{52} = 258$ $50/2(\text{their}(u_{51} + u_{100}))$ dep't on M1 or $50/2[2 \times \text{their}(u_{51}) + 49 \times 5]$	5
	(ii)	use $n/2[2a + (n-1)d]$	M1		
		$(S_{100} =) 25\ 050$ or $(S_{50} =) 6275$	A1		
		$(S_{49} =) 6027$ or $(S_{51} =) 6528$	M1		
		their $(S_{100} - S_{50})$ dep't on M1	A1		
	18 775 cao				

7	1170	4	B1 for $a = 11$ and B1 for $d = 5$ or 20^{th} term = 106 and M1 for $20/2[\text{their}(a) + \text{their}(106)]$ or $20/2[2\text{their}(a) + (20-1) \times \text{their}(d)]$ <u>OR</u> M1 for 6×20 and M2 for $5\left(\frac{20}{2}[20+1]\right)$ o.e.	4
---	------	---	---	---