Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
1	$3n - 2$	B2	for $3n - 2$ oe	Accept a different variable, eg. $3x - 2$
Q1		(B1	for $3n + k$ where $k \neq -2$ or is absent unambiguously shown)	$n = 3n - 2$ gets B1 only $n + 3$ gets NO marks

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
16	$2n^2 - 3$	M1	begins to work with 2nd differences	6 10 14 18 22 4 4 4 4
Q2		M1	identifies $2n^2$ as part of the expression eg gives the sequence 2, 8, 18, 32, ... or gives a quadratic expression which includes the term $2n^2$	A quadratic expression of the form $2n^2 + bn + c$ can be awarded the first 2 marks
		A1	oe	

Paper: 1MA1/2H				
Question	Working	Answer	Mark	Notes
23 (a)		2	M1	for start to express the common ratio algebraically, eg $1/(\sqrt{x} - 1)$ or $(\sqrt{x} + 1)/1$ or $\sqrt{x} + 1 = k \times 1$ or $1 = k \times(\sqrt{x} - 1)$
			M1	for setting up an appropriate equation in x, eg $1/(\sqrt{x} - 1)= (\sqrt{x} + 1)/1$
Q3			C1	for convincing argument to show $x = 2$
(b)		Shown	M1	for expressing the relationship between the common ratio, one of the first three terms of the sequence and the fifth term, eg 5th term = 3rd term $\times$ (common ratio)²
			C1	for a complete explanation to include eg, $(\sqrt{2} +1)(\sqrt{2} +1)² = 7 + 5\sqrt{2}$

Paper: 1MA1/2H				
Question	**Working**	**Answer**	**Mark**	**Notes**
22 **Q4**		$2n^2 + n + 1$	M1 M1 A1	for a correct start to a method to find nth term, eg. equal 2nd differences imply a term in n^2 or sight of $an^2 + bn + c$ for a method leading to $2n^2$ and either n or 1 for $2n^2 + n + 1$ oe

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
16 (a)	42	P1	for process to find an equation in a and b, eg $a \times 2^2 + b \times 2 = -2$ $(4a + 2b = -2)$ or $a \times 4^2 + b \times 4 = 12$ $(16a + 4b = 12)$	
		P1	for process to find a pair of simultaneous equations and eliminate one unknown, eg $16a + 8b = -8$ and $16a + 4b = 12$ and subtraction or $16a + 4b = 12$ and $8a + 4b = -4$ and subtraction	Allow one arithmetic error in elimination, eg $16a + 8b = -8$ and $16a + 4b = 12$ leading to $4b = 20$ but no subtraction sign seen
Q5		A1	for $a = 2$ and $b = -5$	
		A1	cao	
(b)	$n^2 - n$	M1	for correct method, eg n^2 seen as a term	
		A1	for $n^2 - n$ oe	

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
16 **Q6**	$3n^2 + 2n + 5$	M1	for a correct start to a method to find the nth term, eg equal 2nd differences imply a term in n^2	Need to see constant second difference found and n^2
		M1	for working with $3n^2$, eg $3n^2$ and sequence 7, 9, 11, …	$3n^2 + 2n$ implies M2
		A1	for $3n^2 + 2n + 5$	

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
19 **Q7**	788.4	P1	for substituting values, eg $1040 = K \times 1200 + 20$	
		P1	for process to find K, eg $(1040 - 20) \div 1200$ oe $(= 0.85)$	
		P1	for complete process, eg 09 17: "0.85" $\times$ 1040 + 20 (= 904); 09 18: "0.85" $\times$ "904" + 20	
		A1	for 788.4 or 788 or 789	

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
5	12	P1	for a process to find the fifth term, eg $3a + 5a$ (= 8a)	
Q8		P1	for setting up the equation eg $a + 2a + 3a + 5a + [8a] = 228$	[8a] allow use of what is clearly indicated as the missing term $\frac{228}{19}$ or $\frac{228}{1+2+3+5+8}$ scores P1 P1 $\frac{228}{1+2+3+5+[8]}$ scores P0P1
		A1	cao	

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
19	0.95	P1	for initial use of the formula eg $3610 = kP_n$ or $P_{n+1} = 4000k$ or for $P_{n+2} = k^2 P_n$ or for $3610 = k^2 \times 4000$	Accept n or any integer replacement for n
Q9		P1	for a complete method to find k eg $\sqrt{\dfrac{3610}{4000}}$ or ± 0.95	This may be seen in steps
		A1	oe	

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
13 **Q10**	408	M1 A1	for 1.01 × 400 (= 404) or 408.04 or 412.08 cao	412(.08) on the answer line M1A0 1.01 × 400 may be seen as part of a calculation

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
6	Shown (supported)	M1	for method to find at least two terms, eg $2 \times 4^2 - 1$ (= 31) **and** $40 - 3^2$ (= 31)	1 7 17 31 49 71 97 127 161 199 39 36 31 24 15 4 –9
Q11		M1	for generating at least three correct terms of each sequence	
		A1	for generating at least the terms 1, 7, 17, 31, 49 of the first sequence **and** at least the terms 39, 36, 31, 24, 15, 4 of the second sequence	

Paper: 1MA1/2H

Question		Answer	Mark	Mark scheme	Additional guidance
22	(a)	163 or 164	P1	uses formula eg $1.2 \times 200 - 50$ (= 190)	
Q12			P1	for complete process, eg May: $1.2 \times$ "190" $- 50$ (= 178) **and** June: $1.2 \times$ "178" $- 50$ (= 163.6)	
			A1	for 163 or 164	
	(b)	Statement	C1	(dep P1) ft statement, eg there won't be any rabbits, fewer rabbits, decrease	

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
20 **Q13**	$n^2 - 2n$	M1 A1	for correct deduction from differences, eg 2nd difference of 2 implies $1n^2$ **or** gives a quadratic expression which includes the term $1n^2$ **or** states 1,4,9,16,25 and deduces 2,4,6,8,10 oe	

Paper: 1MA1/1H

Question	Answer	Mark	Mark scheme	Additional guidance
23 (a)	4000	P1	for process to identify the common ratio, eg $400\sqrt{5} \div 200$ $(= 2\sqrt{5})$ or $200 \div 400\sqrt{5}$ $(= \dfrac{1}{2\sqrt{5}})$ **or** for a process to find the next term of the sequence, eg $200 \times (200 \div 10)$	May use any 2 consecutive terms
		A1	cao	
(b)	5	P1	for process to find the ratio of the 4th and 6th terms, eg $\dfrac{5\sqrt{2}}{8} \div \dfrac{5\sqrt{2}}{4}$ $(= \dfrac{1}{2})$ or $\dfrac{5\sqrt{2}}{4} \div \dfrac{5\sqrt{2}}{8}$ $(= 2)$ **or** for finding that the 2nd term is $\dfrac{5\sqrt{2}}{2}$	
		P1	for complete process to find 1st term, eg $\dfrac{5\sqrt{2}}{4} \div \left(\dfrac{1}{\sqrt{2}}\right)^{3}$	
		A1	cao	Award 0 marks for a correct answer with no supportive working

Q14

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
3 (a)	$6n + 1$	B2	oe	
		(B1	for $6n + c$ where c is an integer $\neq 1$ or is missing)	
(b) **Q15**	Shown with supportive working	M1	for $8 - 6n = -58$ or $8 - 6 \times 11$ $(= -58)$ **or** starts to list terms of the sequence, with at least 3 correct or any other valid method.	$2, -4, -10, -16, -22, -28, -34, -40, -46, -52$
		A1	shown with working or an explanation , eg Yes and 11 or $2, -4, -10, -16, ..., -52, -58$	May stop at -58 or ring if sequence continues

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
12 (a)	6	M1	for an attempt to evaluate 1.13^n for at least one value of n (with $n > 1$)	1.13, 1.27…, 1.44…, 1.63…, 1.84…, 2.08… May be used with a value Values rounded or truncated to 2dp or better
		A1	6 years coming from finding n such that $1.13^n > 2$	
(b) **Q16**	Explanation	C1	for explanation **Acceptable examples** it will decrease the number of years will go down we can't tell (as we don't know how much it is increasing by) it will be an overestimate **Not acceptable examples** it will increase it will be an underestimate	

Paper: 1MA1/3H

Question	Answer	Mark	Mark scheme	Additional guidance
20	44 384	P1	for process to find a, eg. $29\,600 = 24\,000a + 800$ or $(a =) 1.2$ oe	
Q17		P1	for $(P_{2020} =)$ "1.2" $\times 29\,600 + 800\ (= 36\,320)$	
		P1	for $(P_{2021} =)$ "1.2" $\times$ "36 320" $+ 800$	
		A1	cao	