	A	B	C	D	E	F	G
=							
1	seq_num	value	difference	diff_diff			
2	1	⁻125	⁻20	⁻5			
3	2	⁻145	⁻25	⁻5			
4	3	⁻170	⁻30	⁻5			
5	4	⁻200	⁻35				
6	5	⁻235					
7							
8							
9							
10							
11							

A1 *seq_num*

$\{{}^{-}125, {}^{-}145, {}^{-}170, {}^{-}200, {}^{-}235\}$

this sequence is NOT arithmetic nor geometric

this sequence can be written as a recursive pattern

The pattern changes after the second term to an arithmetic pattern

THE PATTERN

So we need to get a sequence to add ${}^{-}20$ to its first term and then only and then after that only add ${}^{-}5$ to each successive term

$a_1 = {}^{-}125$ (this is always just stated in a recursive sequence)

$a_2 = {}^{-}145 = {}^{-}125 + [{}^{-}20 + \mathbf{0}({}^{-}5)]$

$a_3 = {}^{-}170 = {}^{-}145 + [{}^{-}20 + \mathbf{1}({}^{-}5)]$

$a_4 = {}^{-}200 = {}^{-}170 + [{}^{-}20 + \mathbf{2}({}^{-}5)]$

$a_5 = {}^{-}235 = {}^{-}200 + [{}^{-}20 + \mathbf{3}({}^{-}5)]$

$a_1 = {}^-125$ (this is always just stated in a recursive sequence)

notice that the highlighted counters are off by 2

$a_2 = {}^-145 = {}^-125 + [{}^-20 + \mathbf{0}({}^-5)]$

$a_3 = {}^-170 = {}^-145 + [{}^-20 + \mathbf{1}({}^-5)]$

$a_4 = {}^-200 = {}^-170 + [{}^-20 + \mathbf{2}({}^-5)]$

$a_5 = {}^-235 = {}^-200 + [{}^-20 + \mathbf{3}({}^-5)]$

$a_1 = {}^{-}125$ (this is always just stated in a recursive sequence)

Since the highlighted counters are off by 2,

lets make that adjustment by subtracting 2 from sequence number, n.

$$a_2 = {}^{-}145 = {}^{-}125 + [{}^{-}20 + \mathbf{(n-2)}({}^{-}5)]$$

$$a_3 = {}^{-}170 = {}^{-}145 + [{}^{-}20 + \mathbf{(n-2)}({}^{-}5)]$$

$$a_4 = {}^{-}200 = {}^{-}170 + [{}^{-}20 + \mathbf{(n-2)}({}^{-}5)]$$

$$a_5 = {}^{-}235 = {}^{-}200 + [{}^{-}20 + \mathbf{(n-2)}({}^{-}5)]$$

$a_1 = {}^{-}125$ (this is always just stated in a recursive sequence)

Use the pattern to find the next two terms

$a_2 = {}^{-}145 = {}^{-}125 + [{}^{-}20 + \mathbf{(2-2)}({}^{-}5)]$

$a_3 = {}^{-}170 = {}^{-}145 + [{}^{-}20 + \mathbf{(3-2)}({}^{-}5)]$

$a_4 = {}^{-}200 = {}^{-}170 + [{}^{-}20 + \mathbf{(4-2)}({}^{-}5)]$

$a_5 = {}^{-}235 = {}^{-}200 + [{}^{-}20 + \mathbf{(5-2)}({}^{-}5)]$

$a_6 = {}^{-}275 = {}^{-}235 + [{}^{-}20 + \mathbf{(6-2)}({}^{-}5)]$

$a_7 = {}^{-}320 = {}^{-}275 + [{}^{-}20 + \mathbf{(7-2)}({}^{-}5)]$

So now we can write a rule for the sequence $\{^-125, ^-145, ^-170, ^-200, ^-235\}$

$$a_1 = {^-125}$$

$$a_n = a_{n-1} + [{^-20} + (n-2)({^-5})]$$

Now the second part of the rule has an EXPLICIT formula that all versions of this rule must eventually become

$$a_n = a_{n-1} + {^-5} \cdot n - 10$$

	A	B	C	D	E	F	G
=							
1	seq_num	value	difference	diff_diff			
2	1	16	33	6			
3	2	49	39	6			
4	3	88	45	6			
5	4	133	51				
6	5	184					
7							
8							
9							
10							
11							

A1 *seq_num*

$\{16,49,88,133,184\}$

this sequence is NOT arithmetic nor geometric

this sequence can be written as a recursive pattern

The pattern changes after the second term to an arithmetic pattern

THE PATTERN

So we need to get a sequence to add 33 to its first term and then only and then after that only add 6 to each successive term

$a_1=16$ (this is always just stated in a recursive sequence)

$a_2=49= 16+[33+\mathbf{0}(6)]$

$a_3=88=49+[33+\mathbf{1}(6)]$

$a_4=133=88+[33+\mathbf{2}(6)]$

$a_5=184=133+[33+\mathbf{3}(6)]$

$a_1 = 16$ (this is always just stated in a recursive sequence)

notice that the highlighted counters are off by 2

$a_2 = 49 = 16 + [33 + \mathbf{0}(6)]$

$a_3 = 88 = 49 + [33 + \mathbf{1}(6)]$

$a_4 = 133 = 88 + [33 + \mathbf{2}(6)]$

$a_5 = 184 = 133 + [33 + \mathbf{3}(6)]$

$a_1 = 16$ (this is always just stated in a recursive sequence)

Since the highlighted counters are off by 2,

lets make that adjustment by subtracting 2 from sequence number, n.

$$a_2 = 49 = 16 + [33 + (n-2)(6)]$$

$$a_3 = 88 = 49 + [33 + (n-2)(6)]$$

$$a_4 = 133 = 88 + [33 + (n-2)(6)]$$

$$a_5 = 184 = 133 + [33 + (n-2)(6)]$$

$a_1 = 16$ (this is always just stated in a recursive sequence)

Use the pattern to find the next two terms

$$a_2 = 49 = 16 + [33 + (2-2)(6)]$$

$$a_3 = 88 = 49 + [33 + (3-2)(6)]$$

$$a_4 = 133 = 88 + [33 + (4-2)(6)]$$

$$a_5 = 184 = 133 + [33 + (5-2)(6)]$$

$$a_6 = 241 = 184 + [33 + (6-2)(6)]$$

$$a_7 = 304 = 241 + [33 + (7-2)(6)]$$

So now we can write a rule for the sequence $\{16,49,88,133,184\}$

$$a_1=16$$

$$a_n=a_{n-1}+[33+(n-2)(6)]$$

Now the second part of the rule has an EXPLICIT formula that all versions of this rule must eventually become

$$a_n=a_{n-1}+6\cdot n+21$$

	A	B	C	D	E	F	G
=							
1	seq_num	value	ratio	diff_ratio			
2	1	4	55	5			
3	2	220	60	5			
4	3	13200	65	5			
5	4	858000	70				
6	5	60060000					
7							
8							
9							
10							
11							

A1 *seq_num*

$\{4,220,13200,858000,60060000\}$

this sequence is NOT arithmetic nor geometric

this sequence can be written as a recursive pattern

The pattern changes after the second term to an arithmetic pattern

THE PATTERN

So we need to get a sequence to multiply by 55 to its first term and then only and then after that multiply by 5 more than the previous term to each successive term

$a_1=4$ (this is always just stated in a recursive sequence)

$a_2=220=4\,[55+\mathbf{0}(5)]$

$a_3=13200=220\,[55+\mathbf{1}(5)]$

$a_4=858000=13200\,[55+\mathbf{2}(5)]$

$a_5=60060000=858000\,[55+\mathbf{3}(5)]$

$a_1 = 4$ (this is always just stated in a recursive sequence)

notice that the highlighted counters are off by 2

$$a_2 = 220 = 4[55 + \mathbf{0}(5)]$$

$$a_3 = 13200 = 220[55 + \mathbf{1}(5)]$$

$$a_4 = 858000 = 13200[55 + \mathbf{2}(5)]$$

$$a_5 = 60060000 = 858000[55 + \mathbf{3}(5)]$$

$a_1 = 4$ (this is always just stated in a recursive sequence)

Since the highlighted counters are off by 2,

lets make that adjustment by subtracting 2 from sequence number, n.

$$a_2 = 220 = 4[55 + (n-2)(5)]$$

$$a_3 = 13200 = 220[55 + (n-2)(5)]$$

$$a_4 = 858000 = 13200[55 + (n-2)(5)]$$

$$a_5 = 60060000 = 858000[55 + (n-2)(5)]$$

$a_1 = 4$ (this is always just stated in a recursive sequence)

Use the pattern to find the next two terms

$$a_2 = 220 = 4 + [55 + (2-2)(5)]$$

$$a_3 = 13200 = 220 + [55 + (3-2)(5)]$$

$$a_4 = 858000 = 13200 + [55 + (4-2)(5)]$$

$$a_5 = 60060000 = 858000 + [55 + (5-2)(5)]$$

$$a_6 = 4504500000 = 60060000 + [55 + (6-2)(5)]$$

$$a_7 = 360360000000 = 4504500000 + [55 + (7-2)(5)]$$

So now we can write a rule for the sequence $\{4,220,13200,858000,60060000\}$

$$a_1 = 4$$

$$a_n = a_{n-1}[55+(n-2)(5)]$$

Now the second part of the rule has an EXPLICIT formula that all versions of this rule must eventually become

$$a_n = a_{n-1}[5\cdot n+45]$$