Definition
For any awkward number series $S_{a,n}$, consecutive elements are called *twins* if their difference is $a + 1$.

Awkward Twins Conjecture
For any awkward number series $S_{a,n}$, there are an infinite number of twin elements.

Note The twin prime conjecture which states there are an infinite number of twin primes has never been proven so I doubt you'll prove it as a corollary.

Definition
An element, s_i, of any awkward number series is called a *staple* if it is a less than the next element: $s_{i+1} - s_i = a$.

Lemma
For any awkward number series $S_{a,n}$, the first $ceil(\frac{n}{a}) + 1$ elements are given by $s_i = a(i + 1) + n$.

Proof
The initial element is given by $s_i = a(0 + 1) + n$.

Until the initial element completes its first cycle, the machine will be forced to create a new element every a steps.

Lemma
The $ceil(\frac{n}{a}) + 2 = i$ element is equal to $s_i = ai + 2n$ if $n > a$ or $s_i = a(i + 1) + 2n$ otherwise.

Note
If this is true, then this probably has something to do with the awkward twins conjecture.

Staple Conjecture
For any awkward number series $S_{a,n}$, the first $ceil(\frac{n}{a}) + 1$ elements are the only staples.

Note
If this is true, then this probably has something to do with the awkward twins conjecture.

Linear Combination Conjecture
For any awkward number series $S_{a,n}$, every element can be expressed in the form $s_i = xa + yn$ for some integers $x, y \geq 0$.

Note
I haven't the slightest clue why this is true... but all the examples I've run have held