Collatz Conjecture:

Start w/ any integer n.

if n is even, divide by 2.

else, multiply by 3 & add 1.

Repeat until $n = 1$.

Lucas Sequence: for $P, Q \in \mathbb{Z}$

we have the following sequence $a_0, a_1, \ldots a_n$:

$$a_0 = 0$$
$$a_1 = 1$$
$$\text{for } n > 1, \quad a_n = P a_{n-1} - Q a_{n-2}$$

E.g. $P = 1, Q = -1$ gives Fibonacci seq.