Today’s resource features one question from the recently released 2020 CEMC Mathematics Contests.

2020 Fryer Contest, #3

In a Dlin sequence, the first term is a positive integer and each term after the first is calculated by adding 1 to the previous term in the sequence, then doubling the result. For example, the first seven terms of the Dlin sequence with first term 4 are:

4, 10, 22, 46, 94, 190, 382

(a) The 5th term in a Dlin sequence is 142. What are the 4th and 6th terms in the sequence?

(b) Determine all possible first terms which give a Dlin sequence that includes 1406.

(c) Which possible first terms from 10 to 19 inclusive produce a Dlin sequence in which all terms after the first have the same ones (units) digit?

(d) Determine the number of positive integers between 1 and 2020, inclusive, that can be the third term in a Dlin sequence.

More Info:
Check out the CEMC at Home webpage on Monday, June 15 for a solution to the Contest Day 6 problem.