

Answer on Question #79538 – Math – Combinatorics | Number Theory

Question

How many numbers between 8 and 840 have a remainder of 3 when divided by 7.

Solution

The numbers are

$$10, 17, 24, \dots, 836.$$

Using formulae for the terms of the arithmetic sequence

$$a_1 = 10, \quad a_n = a_1 + 7(n - 1),$$

one gets

$$n = \frac{a_n - a_1}{7} + 1$$

There are

$$\frac{836 - 10}{7} + 1 = 119$$

numbers between 8 and 840 which have a remainder of 3 when divided by 7.

Answer: 119.