# Seven sequences of Poulet numbers selected by some properties of their digits product

Marius Coman
email: mariuscoman13@gmail.com

**Abstract.** In this paper I present seven sequences of Poulet numbers selected by some properties of their digits product: (1) - (5) Poulet numbers for which the product of their digits is equal to (1) q^2 – 1, where q prime; (2) q^2 – 9, where q prime; (3) 9*q^2 – 9, where q prime; (4) 2^n, where n natural; (5) Q – 1, where Q is also a Poulet number and (6) – (7) Poulet numbers divisible by 5 for which the product of their digits taken without the last one is equal to (6) q^2 – 1, where q prime; (7) Q – 1, where Q is also a Poulet number. Finally, I conjecture that all these seven sequences have an infinity of terms.

## Seven sequences of Poulet numbers selected by some properties of their digits product

Conjecture: the Sequences 1-7 presented below have an infinity of terms.

**Sequence 1:** Poulet numbers for which the product of their digits is equal to q^2 – 1, where q prime.

The first 21 terms: 645, 1387, 5461, 8321, 46657, 62745, 75665, 126217, 157641, 282133, 875161, 1357441, 1711381, 1811573, 2213121, 2487941, 2513841, 2537641, 2617451, 3581761, 3726541, having the corresponding q equal to: 11, 13, 11, 7, 71, 41, 71, 13, 29, 17, 41, 41, 13, 29, 5, 127.

**Sequence 2:** Poulet numbers for which the product of their digits is equal to q^2 – 9, where q prime.

The first 3 terms: 57421, 72885, 1145257, having the corresponding q equal to: 17, 67, 53.

**Sequence 3:** Poulet numbers for which the product of their digits is equal to 9*q^2 – 9, where q prime.

The first terms: (...) 563473, 743665, 915981, 1157689, 1251949, 1252697, 2113665, 2261953, 2419385, 2921161, 4151869, having the corresponding q equal to: (...) 29, 41, 19, 41, 19, 29, 11, 19, 31, 5, 31.

**Sequence 4:** Poulet numbers for which the product of their digits is equal to 2^n, where n natural.

The first 7 terms: 8481, 2821, 212421, 228241, 1128121, 1141141, 2142141, having the corresponding n equal to: 8, 5, 5, 8, 5, 4, 6.

**Sequence 5:** Poulet numbers for which the product of their digits is equal to Q - 1, where Q is also a Poulet number.

The first 3 terms: 87249, 476971, 1837381, having the corresponding q equal to: 4033, 10585, 4033.

**Sequence 6:** Poulet numbers divisible by 5 for which the product of their digits taken without the last one is equal to q^2 – 1, where q prime.

The first 8 terms: 645, 2465, 121465, 215265, 825265, 1815465, 2232865, 2531845, having the corresponding q equal to: 5, 7, 7, 11, 31, 31, 37, 31.

**Sequence 7:** Poulet numbers divisible by 5 for which the product of their digits taken without the last one is equal to Q – 1, where Q is also a Poulet number.

The first 2 terms: 2419385, 3779185, having the corresponding Q equal to: 10585, 1729.

Note: the terms from the sequences above are up to the $500^{th}$ Poulet number (4154977).