Conjecture on numbers n obtained concatenating two primes related to the number of primes up to n

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Abstract. In this paper I conjecture that there exist an infinity of numbers n obtained concatenating two primes p and q, where p = 30*k + m1 and q = 30*h + m2, p < q, m1 and m2 distinct, having one from the values 1, 7, 11, 13, 17, 19, 23, 29, such that the number of primes congruent to m1 (mod 30) up to n is equal to the number of primes congruent to m2 (mod 30) up to n. Example: for n = 1723 obtained concatenating the primes p = 17 and q = 23, there exist 34 primes of the form 30*k + 17 up to 1723 and 34 primes of the form 30*k + 23 up to 1723.

Conjecture:

There exist an infinity of numbers n obtained concatenating two primes p and q, where p = 30*k + m1 and q = 30*h + m2, p < q, m1 and m2 distinct, having one from the values 1, 7, 11, 13, 17, 19, 23, 29, such that the number of primes congruent to m1 (mod 30) up to n is equal to the number of primes congruent to m2 (mod 30) up to n.

Example: for n = 1723 obtained concatenating the primes p = 17 and q = 23, there exist 34 primes of the form 30*k + 17 up to 1723 and 34 primes of the form 30*k + 23 up to 1723.

The first seventeen numbers n:

: 711, because there exist 16 primes congruent to 7 (mod 30) respectively 16 primes congruent to 11 (mod 30) up to n;

: 713, because there exist 16 primes congruent to 7 (mod 30) respectively 16 primes congruent to 13 (mod 30) up to n;

: 723, because there exist 16 primes congruent to 7 (mod 30) respectively 16 primes congruent to 23 (mod 30) up to n;

: 729, because there exist 17 primes congruent to 7 (mod 30) respectively 17 primes congruent to 29 (mod 30) up to n;

: 743, because there exist 17 primes congruent to 7 (mod 30) respectively 17 primes congruent to 13 (mod 30) up to n;

: 753, because there exist 17 primes congruent to 7 (mod 30) respectively 17 primes congruent to 23 (mod 30) up to n;

: 783, because there exist 18 primes congruent to 7 (mod 30) respectively 18 primes congruent to 23 (mod 30) up to n;

: 1167, because there exist 26 primes congruent to 11 (mod 30) respectively 26 primes congruent to 7 (mod 30) up to n;

: 1317, because there exist 27 primes congruent to 13 (mod 30) respectively 27 primes congruent to 17 (mod 30) up to n;

: 1323, because there exist 27 primes congruent to 13 (mod 30) respectively 27 primes congruent to 23 (mod 30) up to n;

: 1329, because there exist 27 primes congruent to 13 (mod 30) respectively 27 primes congruent to 29 (mod 30) up to n;

: 1347, because there exist 27 primes congruent to 13 (mod 30) respectively 27 primes congruent to 17 (mod 30) up to n;

: 1353, because there exist 27 primes congruent to 13 (mod 30) respectively 27 primes congruent to 23 (mod 30) up to n;

: 1359, because there exist 27 primes congruent to 13 (mod 30) respectively 27 primes congruent to 29 (mod 30) up to n;

: 1389, because there exist 27 primes congruent to 13 (mod 30) respectively 27 primes congruent to 29 (mod 30) up to n;

: 1723, because there exist 34 primes congruent to 17 (mod 30) respectively 34 primes congruent to 23 (mod 30) up to n;

: 1737, because there exist 34 primes congruent to 17 (mod 30) respectively 34 primes congruent to 7 (mod 30) up to n.