Three conjecture on the primes obtained concatenating p with (p-1)÷2 respectively with (p+1)÷2 where p prime

Abstract. In this paper I make the following three conjectures on primes: (I) there exist an infinity of primes q obtained concatenating to the left a prime p with the number (p – 1)/2 (example: for p = 23, q is the number obtained concatenating 23 to the left with (p – 1)/2 = 11, i.e. q = 1123, prime); (II) there exist an infinity of primes q obtained concatenating to the left a prime p with the number (p + 1)/2 (example: for p = 41, q is the number obtained concatenating 41 to the left with (p + 1)/2 = 21, i.e. q = 2141, prime); (III) there exist an infinity of pairs of primes (q1, q2) where q1 is obtained concatenating to the left a prime p with the number (p – 1)/2 and q2 is obtained concatenating to the left the same prime p with the number (p + 1)/2.

Conjecture 1:

There exist an infinity of primes q obtained concatenating to the left a prime p with the number (p – 1)/2 (example: for p = 23, q is the number obtained concatenating 23 to the left with (p – 1)/2 = 11, i.e. q = 1123, prime.

The sequence of primes q:

:	q = 37 for p = 7;	:	q = 613 for p = 13;
:	q = 919 for p = 19;	:	q = 1123 for p = 23;
:	q = 1429 for p = 29;	:	q = 1531 for p = 31;
:	q = 2143 for p = 43;	:	q = 2347 for p = 47;
:	q = 3061 for p = 61;	:	q = 3571 for p = 71;
:	q = 3673 for p = 73;	:	q = 50101 for p = 101;
:	q = 56113 for p = 113;	:	q = 63127 for p = 127;
:	q = 74149 for p = 149;		(...)

Conjecture 2:

There exist an infinity of primes q obtained concatenating to the left a prime p with the number (p + 1)/2 (example: for p = 41, q is the number obtained concatenating 41 to the left with (p + 1)/2 = 21, i.e. q = 2141, prime.

The sequence of primes q:

:	q = 47 for p = 7;	:	q = 1019 for p = 19;
:	q = 1223 for p = 23;	:	q = 2141 for p = 41;
:	q = 2243 for p = 19;	:	q = 2447 for p = 47;
:	q = 2753 for p = 53;	:	q = 2753 for p = 53;
:	q = 3467 for p = 67;	:	q = 3671 for p = 71;
:	q = 4079 for p = 79;	:	q = 4283 for p = 83;
:	q = 52103 for p = 103;	:	q = 55109 for p = 109;
:	q = 70139 for p = 139;		(...)
:	q = 52362104723 for p = 104723;		(...)

Conjecture 3:

There exist an infinity of pairs of primes (q1, q2) where q1 is obtained concatenating to the left a prime p with the number (p – 1)/2 and q2 is obtained concatenating to the left the same prime p with the number (p + 1)/2.

The sequence of pairs of primes (q1, q2):

: (q1, q2) = (37, 47) for p = 7;
: (q1, q2) = (919, 1019) for p = 19;
: (q1, q2) = (1123, 1223) for p = 23;
: (q1, q2) = (2143, 2243) for p = 43;
: (q1, q2) = (2347, 2447) for p = 47;
: (q1, q2) = (3571, 3671) for p = 71;
(...)

Observation:

Note the pairs of twin primes (41, 43) and (71, 73) and the corresponding pairs of twin primes (2141, 2143) and (3671, 3673) obtained with the formula above.