Four conjectures involving the squares of primes and the numbers 360 and 6240

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Abstract. In this paper I conjecture that there exist an infinity of primes m such that the number n = m*(m + 360) – 6240 is square of prime, respectively prime, respectively semiprime p*q such that q – p + 1 is prime or square of prime, respectively semiprime p1*q1 such that q1 – p1 + 1 is a semiprime q2*p2 such that q2 – p2 + 1 is prime or square of prime.

Conjecture 1:

There exist an infinity of primes m such that the number n = m*(m + 360) – 6240 is square of prime.

Such pairs [m, n] are:

: [17, 169 = 13^2]; [19, 961 = 31^2]; [29, 5041 = 71^2]; [41, 10201 = 101^2]; [131, 58081 = 241^2]; [193, 100489 = 317^2], [263, 157609 = 397^2]...

Conjecture 2:

There exist an infinity of primes m such that the number n = m*(m + 360) – 6240 is prime.

Such pairs [m, n] are:

: [31, 5881]; [47, 12889]; [53, 15649]; [59, 18481]; [61, 19441]; [67, 22369]; [83, 30529]; [89, 33721]; [127, 55609]; [151, 70921]; [157, 74929]; [167, 81769], [293, 185089], [307, 198529], [311, 202441]...

Conjecture 3:

There exist an infinity of primes m such that the number n = m*(m + 360) – 6240 is a semiprime n = p*q with the property that q – p + 1 is prime or square of prime.

Such pairs [m, n] are:

: [23, 2569 = 7*367 (367 – 7 + 1 = 361 = 19^2)];
: [43, 1089 = 13*853 (853 – 13 + 1 = 841 = 29^2)];

: [101, 40321 = 61*661 (661 - 61 + 1 = 601)];
: [103, 41449 = 181*229 (229 - 181 + 1 = 49 = 7^2)];
: [107, 43729 = 7*6247 (6247 - 7 + 1 = 6241 = 79^2)];
: [137, 61849 = 127*487 (487 - 127 + 1 = 361 = 19^2)];
: [229, 128641 = 197*653 (653 - 197 + 1 = 457)];
: [239, 136921 = 269*509 (509 - 269 + 1 = 241)];
: [281, 173881 = 41*4241 (4241 - 41 + 1 = 4201)];
: [283, 175729 = 17*10337 (10337 - 17 + 1 = 10321)];
: [313, 204409 = 71*2879 (2879 - 71 + 1 = 2809 = 53^2)];
: [337, 228649 = 373*613 (613 - 373 + 1 = 241)];
: [347, 239089 = 47*5087 (5087 - 47 + 1 = 5041 = 71^2)] [...]

Conjecture 4:

There exist an infinity of primes m such that the number n = m*(m + 360) - 6240 is a semiprime n = p1*q1 with the property that q1 - p1 + 1 is a semiprime p2*q2 such that q2 - p2 is prime or square of prime.

Such pairs [m, n] are:

: [73, 25369 = 23*1103 (1103 - 23 + 1 = 1081 = 23*47 and 47 - 23 + 1 = 25 = 5^2)];
: [97, 38089 = 41*929 (929 - 41 + 1 = 889 = 7*127 and 127 - 7 + 1 = 121 = 11^2)];
: [109, 44881 = 37*1213 (1213 - 37 + 1 = 1177 = 11*107 and 107 - 11 + 1 = 97)];
: [113, 47209 = 17*2777 (2777 - 17 + 1 = 2761 = 11*251 and 251 - 11 + 1 = 241)];
: [163, 79009 = 7*11287 (11287 - 7 + 1 = 11281 = 29*389 and 389 - 29 + 1 = 361 = 19^2)];
: [197, 103489 = 37*2797 (2797 - 37 + 1 = 2761 = 11*251 and 251 - 11 + 1 = 241)];
: [223, 123769 = 61*2029 (2029 - 61 + 1 = 1969 = 11*179 and 179 - 11 + 1 = 169 = 13^2)];
: [227, 127009 = 107*1187 (1187 - 107 + 1 = 1081 = 23*47 and 47 - 23 + 1 = 25 = 5^2)];
: [269, 162961 = 107*1523 (1523 - 107 + 1 = 1417 = 13*109 and 109 - 13 + 1 = 97)];
: [277, 170209 = 13*13093 (13093 - 13 + 1 = 13081 = 103*127 and 127 - 103 + 1 = 25 = 5^2)] [...]

Note:

Interesting results (primes, certain types of semiprimes) are also probably obtained with the formula n = m*(m + s - 1) - 6240, where s is a square of prime or a Poulet number (I often stated that these numbers have sometimes a behaviour similar to squares of primes).