

Sheet1

TF example

let $p=29$, $f=2kp+1$, wheel size 60 as in prime95.

p 29 2^p-1 536870911 Sqrt = 23170.4750

Build the wheel, before further candidate sieving

k	2kp+1	sieve by 3	sieve by 5	1 or 7 mod 8	
1	59	59	59		
2	117				
3	175	175			
4	233	233	233	233	
5	291				
6	349	349	349		
7	407	407	407	407	407 a wheel up to 11 would eliminate this from consideration, as in more-classes mfaktc (960 out of 4620)
8	465				
9	523	523	523		
10	581	581	581		
11	639				
12	697	697	697	697	697 composite 17x41, further sieving might eliminate
13	755	755			
14	813				
15	871	871	871	871	871 composite further candidate sieving eliminates 13x67
16	929	929	929	929	
17	987				
18	1045	1045			
19	1103	1103	1103	1103	
20	1161				
21	1219	1219	1219		
22	1277	1277	1277		
23	1335				
24	1393	1393	1393	1393	1393 a wheel up to 11 would eliminate this from consideration, as in more-classes mfaktc (960 out of 4620)
25	1451	1451	1451		
26	1509				
27	1567	1567	1567	1567	
28	1625	1625			
29	1683				
30	1741	1741	1741		
31	1799	1799	1799	1799	1799 a wheel up to 7 would eliminate this from consideration, as in less-classes mfaktc (96 out of 420), or more-classes
32	1857				
33	1915	1915			
34	1973	1973	1973		
35	2031				
36	2089	2089	2089	2089	
37	2147	2147	2147		
38	2205				
39	2263	2263	2263	2263	2263 composite further candidate sieving eliminates 31x73
40	2321	2321	2321	2321	2321 a wheel up to 11 would eliminate this from consideration, as in more-classes mfaktc (960 out of 4620)

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41	2379			
42	2437	2437	2437	
43	2495	2495		
44	2553			
45	2611	2611	2611	
46	2669	2669	2669	
47	2727			
48	2785	2785		
49	2843	2843	2843	
50	2901			
51	2959	2959	2959	2959 a wheel up to 11 would eliminate this from consideration, as in more-classes mfaktc (960 out of 4620)
52	3017	3017	3017	3017 a wheel up to 7 would eliminate this from consideration, as in less-classes mfaktc (96 out of 420), or more-classes
53	3075			
54	3133	3133	3133	
55	3191	3191	3191	3191
56	3249			
57	3307	3307	3307	
58	3365	3365		
59	3423			
60	3481	3481	3481	3481 square of 59

Effectively, since we're only dealing with the odd numbers, the 60 wheel covers a span of 120 p (3 * 5 * 8 p).

It weeds out immediately, all but 16 values.

These initial survivors in column E can be saved, and incremented by successive multiples of 120p before sieving those factor candidates.

Wheel size	largest wheel prime	wheel survivors	ratio left	fraction avoided (of odds)	ratio to previous	Usage notes
12	3	4	0.33333	0.66667		?
60	5	16	0.26667	0.73333	1.1000	prime95 etc and example above
420	7	96	0.22857	0.77143	1.0519	mfaktx less-classes
4620	11	960	0.20779	0.79221	1.0269	mfaktx more-classes
60060	13	11520	0.19181	0.80819	1.0202	diminishing or negative returns to greater complexity
1021020	17	184320	0.18053	0.81947	1.0140	" " (perhaps the tradeoff shifts at very high exponents)