Odd Numbers as the Difference of Two Squares

3 = 4 - 1
5 = 9 - 4
7 = 16 - 9
9 = 25 - 16
11 = 36 - 25
13 = 49 - 36
15 = 16 - 1 ; 64 - 49
17 = 81 - 64
19 = 100 - 81
21 = 25 - 4 ; 121 - 100
23 = 144 - 121
25 = 169 - 144
27 = 36 - 9 ; 196 - 169
29 = 225 - 196
31 = 256 - 225
33 = 49 - 16 ; 289 - 256
35 = 36 - 1 ; 324 - 289
37 = 361 - 324
39 = 64 - 25 ; 400 - 361
41 = 441 - 400
43 = 484 - 441
45 = 49 - 4 ; 81 - 36 ; 529 - 484
47 = 576 - 529
49 = 625 - 576
51 = 100 - 49 ; 676 - 625
53 = 729 - 676
55 = 64 - 9 ; 784 - 729
57 = 121 - 64 ; 841 - 784
59 = 900 - 841
61 = 961 - 900
63 = 64 - 1 ; 144 - 81 ; 1024 - 961
65 = 81 - 16 ; 1089 - 1024
67 = 1156 - 1089
69 = 169 - 100 ; 1225 - 1156
71 = 1296 - 1225
73 = 1369 - 1296
75 = 100 - 25 ; 196 - 121 ; 1444 - 1369
77 = 81 - 4 ; 1521 - 1444
79 = 1600 - 1521
81 = 225 - 144 ; 1681 - 1600
83 = 1764 - 1681
85 = 121 - 36 ; 1849 - 1764
87 = 256 - 169 ; 1936 - 1849
89 = 2025 - 1936
91 = 100 - 9 ; 2116 - 2025
93 = 289 - 196 ; 2209 - 2116
95 = 144 - 49 ; 2304 - 2209
97 = 2401 - 2304
99 = 100 - 1 ; 324 - 225 ; 2500 - 2401

101 = 2601 - 2500
103 = 2704 - 2601
105 = 121 - 16 ; 169 - 64 ; 361 - 256 ; 2809 - 2704
107 = 2916 - 2809
109 = 3025 - 2916
111 = 400 - 289 ; 3136 - 3025
113 = 3249 - 3136
115 = 196 - 81 ; 3364 - 3249
117 = 121 - 4 ; 441 - 324 ; 3481 - 3364
119 = 144 - 25 ; 3600 - 3481
121 = 3721 - 3600
123 = 484 - 361 ; 3844 - 3721
125 = 225 - 100 ; 3969 - 3844
127 = 4096 - 3969
129 = 529 - 400 ; 4225 - 4096
131 = 4356 - 4225
133 = 169 - 36 ; 4489 - 4356
135 = 144 - 9 ; 256 - 121 ; 576 - 441 ; 4624 - 4489
137 = 4761 - 4624
139 = 4900 - 4761
141 = 625 - 484 ; 5041 - 4900
143 = 144 - 1 ; 5184 - 5041
145 = 289 - 144 ; 5329 - 5184
147 = 196 - 49 ; 676 - 529 ; 5476 - 5329
149 = 5625 - 5476
151 = 5776 - 5625
153 = 169 - 16 ; 729 - 576 ; 5929 - 5776
155 = 324 - 169 ; 6084 - 5929
157 = 6241 - 6084
159 = 784 - 625 ; 6400 - 6241
161 = 225 - 64 ; 6561 - 6400
163 = 6724 - 6561
165 = 169 - 4 ; 361 - 196 ; 841 - 676 ; 6889 - 6724
167 = 7056 - 6889
169 = 7225 - 7056
171 = 196 - 25 ; 900 - 729 ; 7396 - 7225
173 = 7569 - 7396
175 = 256 - 81 ; 400 - 225 ; 7744 - 7569
177 = 961 - 784 ; 7921 - 7744
179 = 8100 - 7921
181 = 8281 - 8100
183 = 1024 - 841 ; 8464 - 8281
185 = 441 - 256 ; 8649 - 8464
187 = 196 - 9 ; 8836 - 8649
189 = 225 - 36 ; 289 - 100 ; 1089 - 900 ; 9025 - 8836
191 = 9216 - 9025
193 = 9409 - 9216
195 = 196 - 1 ; 484 - 289 ; 1156 - 961 ; 9604 - 9409
197 = 9801 - 9604
199 = 10000 - 9801

Numbers as the **Sum of Two Squares**

(Numbers that are missing cannot be expressed as the sum of two squares.)

2 = 1 + 1
5 = 1 + 4
8 = 4 + 4
10 = 1 + 9
13 = 4 + 9
17 = 1 + 16
18 = 9 + 9
20 = 4 + 16
25 = 9 + 16
26 = 1 + 25
29 = 4 + 25
32 = 16 + 16
34 = 9 + 25
37 = 1 + 36
40 = 4 + 36
41 = 16 + 25
45 = 9 + 36
50 = 1 + 49 ; 25 + 25
52 = 16 + 36
53 = 4 + 49
58 = 9 + 49
61 = 25 + 36
65 = 1 + 64 ; 16 + 49
68 = 4 + 64
72 = 36 + 36
73 = 9 + 64
74 = 25 + 49
80 = 16 + 64
82 = 1 + 81
85 = 4 + 81 ; 36 + 49
89 = 25 + 64
90 = 9 + 81
97 = 16 + 81
98 = 49 + 49
100 = 36 + 64
101 = 1 + 100
104 = 4 + 100
106 = 25 + 81
109 = 9 + 100
113 = 49 + 64
116 = 16 + 100
117 = 36 + 81
122 = 1 + 121
125 = 4 + 121 ; 25 + 100
128 = 64 + 64
130 = 9 + 121 ; 49 + 81
136 = 36 + 100
137 = 16 + 121
145 = 1 + 144 ; 64 + 81
146 = 25 + 121

148 = 4 + 144
149 = 49 + 100
153 = 9 + 144
157 = 36 + 121
160 = 16 + 144
162 = 81 + 81
164 = 64 + 100
169 = 25 + 144
170 = 1 + 169 ; 49 + 121
173 = 4 + 169
178 = 9 + 169
180 = 36 + 144
181 = 81 + 100
185 = 16 + 169 ; 64 + 121
193 = 49 + 144
194 = 25 + 169
197 = 1 + 196
200 = 4 + 196 ; 100 + 100
202 = 81 + 121
205 = 9 + 196 ; 36 + 169
208 = 64 + 144
212 = 16 + 196
218 = 49 + 169
221 = 25 + 196 ; 100 + 121
225 = 81 + 144
226 = 1 + 225
229 = 4 + 225
232 = 36 + 196
233 = 64 + 169
234 = 9 + 225
241 = 16 + 225
242 = 121 + 121
244 = 100 + 144
245 = 49 + 196
250 = 25 + 225 ; 81 + 169
257 = 1 + 256
260 = 4 + 256 ; 64 + 196
261 = 36 + 225
265 = 9 + 256 ; 121 + 144
269 = 100 + 169
272 = 16 + 256
274 = 49 + 225
277 = 81 + 196
281 = 25 + 256
288 = 144 + 144
289 = 64 + 225
290 = 1 + 289 ; 121 + 169
292 = 36 + 256
293 = 4 + 289
296 = 100 + 196

298 = 9 + 289
305 = 16 + 289 ; 49 + 256
306 = 81 + 225
313 = 144 + 169
314 = 25 + 289
317 = 121 + 196
320 = 64 + 256
325 = 1 + 324 ; 36 + 289 ; 100 + 225
328 = 4 + 324
333 = 9 + 324
337 = 81 + 256
338 = 49 + 289 ; 169 + 169
340 = 16 + 324 ; 144 + 196
346 = 121 + 225
349 = 25 + 324
353 = 64 + 289
356 = 100 + 256
360 = 36 + 324
362 = 1 + 361
365 = 4 + 361 ; 169 + 196
369 = 144 + 225
370 = 9 + 361 ; 81 + 289
373 = 49 + 324
377 = 16 + 361 ; 121 + 256
386 = 25 + 361
388 = 64 + 324
389 = 100 + 289
392 = 196 + 196
394 = 169 + 225
397 = 36 + 361
400 = 144 + 256
401 = 1 + 400
404 = 4 + 400
405 = 81 + 324
409 = 9 + 400
410 = 49 + 361 ; 121 + 289
416 = 16 + 400
421 = 196 + 225
424 = 100 + 324
425 = 25 + 400 ; 64 + 361 ; 169 + 256
433 = 144 + 289
436 = 36 + 400
442 = 1 + 441 ; 81 + 361

The first number that can be expressed in 4 ways is…
1105 = 16 + 1089; 81 + 1024;
144 + 961; 529 + 576