

Numbers Count

- 1 Feb 83 Waring's Problem ; $x^3 + y^3 + 2z^3 = k$
- 2 Mar 83 Lucky numbers, and analogous Goldbach Conjecture
- 3 Apr 83 powerful numbers e.g. $P_6(1234) = 1^6 + 2^6 + 3^6 + 4^6$, iterated $P_n -$ Steinhaus problem
- 4 May 83 triangular, pentagonal, Fibonacci numbers ; $x^3 + y^3 + 2z^3 = k$
- 5 Jun 83 Ulam Sequences – terms are unique sums of 2 earlier distinct terms
- 6 Jul 83 JG Triples – $abc = def$ & $a + b + c = d + e + f$
- 7 Aug 83 Harshad numbers – multiple of sums of digits
- 8 Sep 83 partitions of positive integers, Ramanujan conjecture ; triangular, pentagonal, Fibonacci numbers
- 9 Oct 83 abundant numbers, deficient numbers, perfect numbers, aliquot sequences
- 10 Nov 83 persistence of an integer – iterated product of digits ; Ulam Sequences
- 11 Dec 83 Gilbreath's conjecture – iterated absolute difference of primes ; JG Triples
- 12 Jan 84 fractional approximations to prime numbers, $\prod a_i/b_i$, $a_i, b_i < p$
- 13 Feb 84 Kaprekar process ${}^s N_{r+1} = \text{ascend}({}^s N_r) - \text{descend}({}^s N_r)$, Kaprekar numbers
- 14 Mar 84 sums, differences being powers ; numbers not of form $u^2 + v^2 + w^3 + x^3$; Goormaghtigh $\sum a^i = \sum b^j$
- 15 Apr 84 repunits ; prime numbers with lengthy repdigits – sequences of same digit
- 16 May 84 $z(1 + xy) = x^2 + 2y^2$; $6y^2 = (x + 1)(x^2 - x + 6)$; $y^2, z^2 = x^2 \pm 5u^2$
- 17 Jun 84 Fermat quotient, $a^{p-1} \equiv 1 \pmod{p^2}$; Wilson quotient, $(p - 1)! \equiv -1 \pmod{p^2}$
- 18 Jul 84 Brun's Constant, twin primes
- 19 Aug 84 Collatz's $3n + 1$ problem and generalisation, $a_{n+1} = a_n/p$ ($p|a_n$), $qa_n + r$ (otherwise)
- 20 Sep 84 factorials and primorials near to prime
- 21 Oct 84 binomial coefficients
- 22 Nov 84 multiperfect numbers of order 3
- 23 Dec 84 decimal expansions of $n^{1/m}$, π and e , and normality of their digits
- 24 Jan 85 congruent numbers, $N : b^2 - a^2 = c^2 - b^2 = Nd^2$; Collatz's $3n + 1$ problem
- 25 Feb 85 palindromic primes, pentagonals, n^m ; iterated reversal and addition (196 problem)
- 26 Mar 85 truncatable primes
- 27 Apr 85 multigrade sums of powers, some using all first n integers only ; binomial coefficients
- 28 May 85 Eulers Totient function $\phi(n)$, iterated $n - \phi(n)$, $\phi(n) = \phi(n + 1)$, nontotients ; multiperfects
- 29 Jun 85 Moebius and Mertens functions, $\mu(a)$ and $\sum_{k=1}^n \mu(k)$
- 30 Jul 85 Numeri Idonei, $n : n = ax^2 + by^2$ & $\text{gcd}(ax, by) = 1$
- 31 Aug 85 factors of 2^n with no 0's ; 0 rep units in 2^n ; multiplying number by reverse ; palindromic primes, n^m
- 32 Sep 85 exponential Diophantines, $1 + w^a = x^b y^c + w^d x^e y^f$, w, x, y consecutive primes
- 33 Oct 85 continued fractions ; multigrade sums of powers
- 34 Nov 85 periods of primes ; repetition of digits in $1/\text{prime}$; Eulers Totient function
- 35 Dec 85 denominators and numerators of $\sum_{n=1}^x 1/n$; Eulers Constant γ ; Egyptian fractions
- 36 Jan 86 negative-affirmative arithmetic (number bases with negative digits)
- 37 Feb 86 Euler Phi function ϕ , primitive roots
- 38 Mar 86 Markoff Triples, $p^2 + q^2 + r^2 = 3pqr$; $5(p^2 + q^2 + r^2 + s^2 + t^2)^2 - 7(p^4 + q^4 + r^4 + s^4 + t^4) = 90pqrst$
- 39 Apr 86 lattice points
- 40 May 86 sociable numbers
- 41 Jun 86 primes in arithmetic progression
- 42 Jul 86 sets $t_i : t_i t_j + k, i \neq j$ is square, and generalisations
- 43 Aug 86 Farey series
- 44 Sep 86 divisor function ; $5(p^2 + q^2 + r^2 + s^2 + t^2)^2 - 7(p^4 + q^4 + r^4 + s^4 + t^4) = 90pqrst$
- 45 Oct 86 handling large integers
- 46 Nov 86 postage stamp problem
- 47 Dec 86 Fermat quotient
- 48 Jan 87 Bernoulli and Euler numbers ; irregular primes
- 49 Feb 87 Diophantines ; $w^n + x^n = y^n + z^n$; $\sum^t x^p = \sum^t y^p$ in m ways ; $a^2 + ab + b^2$ in m ways
- 50 Mar 87 Pythagorean Triangle problems
- 51 Apr 87 W-sequences
- 52 May 87 W-sequences
- 53 Jun 87 left factorial $!n = \sum_{i=0}^{n-1} i!$; $2^{n-k} \equiv 1 \pmod{n}$
- 54 Jul 87 Cyprians Last Theorem – sums of consecutive powers
- 55 Aug 87 polygonal, pyramidal and figurate numbers ; Euler solution of $w^n + x^n = y^n + z^n$
- 56 Sep 87 Fermat numbers
- 57 Oct 87 magic squares and cubes
- 58 Nov 87 powerful numbers e.g. $P_6(1234) = 1^6 + 2^6 + 3^6 + 4^6$
- 59 Dec 87 $x_0 = 1, x_1 = 2, (n + 1)x_{n+1} = x_n(x_n + 1)$

60	Jan 88	sums of terms of sequences
61	Feb 88	chess moves
62	Mar 88	$\pi(n)$, the #primes not exceeding n
63	Apr 88	cryptography
64	May 88	difference tables
65	Jun 88	addition chains
66	Jul 88	JG Triples, $abc = def$ & $a + b + c = d + e + f$
67	Aug 88	prime reciprocals
68	Sep 88	rare primes
69	Oct 88	$ax^2 + bx + c$ prime ; $x^n + b$ composite
70	Nov 88	primes – add factors and repeat
71	Dec 88	$x^3 + y^3 + z^3 = n$; $x^4 + y^4 + z^4 + t^4 = u^4$; $(a^4 - b^4)(c^4 - d^4) = e^2$
72	Jan 89	binomial coefficients and primes
73	Feb 89	Lucas sequences, $u_n = pu_{n-1} - qu_{n-2}$, $u_0 = 0, u_1 = 1$, $v_n = pv_{n-1} - qv_{n-2}$, $v_0 = 2, v_1 = p$
74	Mar 89	Chinese Remainder Theorem
75	Apr 89	spacing of primes with respect to squares etc
76	May 89	aliquot parts – sums of divisors
77	Jun 89	non-terminating sequences
78	Jul 89	factorial function
79	Aug 89	partitions into sums of consecutive integers
80	Sep 89	Goldbach Conjecture and sum of primes
81	Oct 89	Khinchin's constant, $K = \prod_{r=1}^{\infty} (1 + 1/(r^2 + 2r))^{ln(r)/ln(2)}$; continued fractions
82	Nov 89	greedy sequences ; Taxicab(3,2,4)
83	Dec 89	cycles of permutations ; Stirling Numbers of 1st Kind ; subfactorials ; Euler Numbers
84	Jan 90	maximum prime factor sequence, $p_{k+1} = \text{mpf}(p_k^2 + 1)$
85	Feb 90	route optimisation
86	Mar 90	points on square grid
87	Apr 90	pseudo primes ; Carmichael numbers
88	May 90	Harshad numbers – multiple of sum of digits
89	Jun 90	quadratic forms and cubic residues
90	Jul 90	amicable numbers
91	Aug 90	quadratic forms and cubic residues
92	Sep 90	primitive roots of safe primes ; Legendre & Jacobi symbols, quadratic residues
93	Oct 90	partitioning problem – (more than one) Knapsack problem
94	Nov 90	quadratic forms and cubic residues
95	Dec 90	CountDown problem
96	Jan 91	patience card game simulations
97	Feb 91	Babylonian fractions, $p/q = 1/a + 1/b + \dots$
98	Mar 91	dice, random numbers and probabilities
99	Apr 91	repetends – decimal expansion of fractions
100	May 91	magic squares
101	Jun 91	monotonic increasing functions
102	Jul 91	sequences of safe primes – $s_{i+1} = 2s_i + 1$, long aliquots $t_{i+1} = s(t_i) = \text{sum of divisors}$
103	Aug 91	Fibonacci type sequences modulo n
	Sep 91	not set
	Oct 91	not set
104	Nov 91	integral triangles and related integral triangles
105	Dec 91	Latin Squares – distinct permutations of coloured objects
106	Jan 92	Hailstone numbers – Collatz's $3n + 1$ problem
107	Feb 92	combinations of binary numbers – Ouroborean rings
108	Mar 92	right angled triangles ; $c^2 = a^2 + b^2$ in m ways ; $c^2 = \sum^t x^2$ in m ways
109	Apr 92	squaring the rectangle – Mrs Perkins quilt
110	May 92	prime concentrations
111	Jun 92	Ulam Sequences – terms are unique sums of 2 earlier distinct terms
112	Jul 92	Smarandache function $S(n)$ – smallest number $S : S! \equiv 0 \pmod{n}$
113	Aug 92	Diophantine and number base dependent equations ; Catalan's Conjecture $x^p - y^q = k$
114	Sep 92	Kaprekar process ${}^s N_{r+1} = \text{ascend}({}^s N_r) - \text{descend}({}^s N_r)$
115	Oct 92	tetrahedra with integer edges
116	Nov 92	number base problems
117	Dec 92	Life

	Jan 93	duplicate of Oct 90
118	Feb 93	Smarandache function – continued from Jul 92
119	Mar 93	solitaire (Chinese checkers)
120	Apr 93	quadratic iteration ; π
121	May 93	simple Diophantine and number base dependent equations
122	Jun 93	aliquot (sum of divisors) & Ulam Sequences – terms are unique sums of 2 earlier distinct terms
123	Jul 93	knights tour, multi-queens problem
124	Aug 93	generalised twin primes ; Eulers Totient function
125	Sep 93	$x^3 + y^3 + z^3 = k$, $x^3 + y^3 + 2z^3 = k$; prime arithmetic progressions
126	Oct 93	rifleman problem ; Stirlings approximation
127	Nov 93	repunits ; random numbers on interval $[0, 1]$
128	Dec 93	Sophie Germain primes, $p_{n+1} = 2p_n + 1$ and higher order polynomial sequences
129	Jan 94	abundant numbers ; primitive roots ; random screen filling
130	Feb 94	polyominoes ; car reversing ; Gallai lines
131	Mar 94	Fibonacci number polynomial and primes ; Nim
132	Apr 94	interval analysis
133	May 94	factorisation ; Babylonian fractions ; $x^3 + y^3 + z^3 - t^3 = 1$, $x^3 - y^2 = 18$
134	Jun 94	primorials, sub-factorials
135	Jul 94	7-segment displays ; number base problems
136	Aug 94	string compression ; repunits
137	Sep 94	lattice points and circles
138	Oct 94	congruent numbers – $x^2 + ay^2 = z^2$, $x^2 - ay^2 = t^2$; $x_i x_j + k = n^2$
139	Nov 94	floor function ; factorising factorials ; Zig Zags
140	Dec 94	factorisation ; generalised Fibonacci ; shift registers ; combining sets ; primes ; interval analysis
141	Jan 95	stamp problem ; restricted INT function
142	Feb 95	Taxicab(3,2,5) ; automorphism
143	Mar 95	generalised gcd ; Wang tiles ; sums of consecutive integers
144	Apr 95	interprimes and paraprimes ; $a^3/b^3 + c^3/d^3 = 6$
145	May 95	Pascals Triangle ; $a^2 + b^2 = c^3$; Nim ; Ouroborean Rings
146	Jun 95	Smarandache sequences ; Stirling permutations
147	Jul 95	non-repeating substrings ; factorisation ; multiperfects ; $a^3 + b^3 = zc^3$
148	Aug 95	Smarandache sequences
149	Sep 95	prime polynomials ; nested bubbles
150	Oct 95	Smarandache numbers
151	Nov 95	powers of numbers e.g. $f(175) = 1^3 + 7^2 + 5^1$; $a^3/b^3 + c^3/d^3 = 6$
152	Dec 95	extensions of Collatz's $3n + 1$ problem
153	Jan 96	powers of numbers e.g. $f(175) = 1^4 + 7^4 + 5^4$; Wilson primes
154	Feb 96	blind barman ; prime intervals ; $x^y + y^x = \text{prime with } \gcd(x, y) = 1$
155	Mar 96	currency design ; non-integer bases
156	Apr 96	Indian tribe elimination on a circle ; array comparison
157	May 96	Collatz's $3n + 1$ problem ; $n! = x^p \pm y^p$, $n! + m! = x^p$; powerful numbers ; primorials
158	Jun 96	descriptive number sequences
159	Jul 96	descriptive number sequences ; $f(175) = 1^3 + 7^2 + 5^1$
160	Aug 96	Golomb rulers ; $n! + 1 = m^2$; $x^3 - y^2 = 18$; $p/q + r/s + t/u = prt/qsu = 1$
161	Sep 96	continued fractions ; $5(p^2 + q^2 + r^2 + s^2 + t^2)^2 - 7(p^4 + q^4 + r^4 + s^4 + t^4) = 90qrst$
162	Oct 96	highest prime function
163	Nov 96	square root function ; $3x^2 + 1/\pi^4 \ln((\pi - x)^2) + 1$
164	Dec 96	tribonacci numbers, snub-dodecahedron numbers ; Mersenne non-primes ; Chiefs and Indians
165	Jan 97	Fractran – generates π , primes etc
166	Feb 97	various number sequences ; circular Golomb rulers
167	Mar 97	$\sum n^2 = N^2$; powers of digits ; Golomb rulers ; $x^2 + ny^2 = \text{prime}$
168	Apr 97	$x_n \equiv (2x_{n-1} + 1) \pmod{n}$
169	May 97	base dependent prime properties ; nonagonals $N(n) = \frac{1}{2}n(7n - 5)$; $\sum n^2 = N^2$; $x^2 + ny^2 = \text{prime}$
170	Jun 97	packing circles/points in squares and circles
171	Jul 97	primes in \mathbb{C} ; tribonacci numbers
172	Aug 97	CountDown problem
173	Sep 97	Look and Say sequences ; pseudo Smarandache function ; Harmonic numbers ; snub-dodecahedron
174	Oct 97	$x^2 + ny^2 = \text{prime}$; $\sum n^2 = N^2$