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770

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~~770~~
938
769

d. sol^ns

n	K (kite)	L (lozenge)	M (iso. trap.)	N (none (oblong))	P (parallelogram)	Q (square)	R (rot^n thru 90°)	S (total)	T (total inc. rot & refl^n)	t_n (# of 3's in line)
2						1		1	1	0
3		1						1	2	8
4		1	1		1	1		4	11	44
5	2			3				5	32	152
6		2		4	2		3	11	50	372
7	1			11	16			22	132	824
8	5		1	40	7		4	57	380	1544
9	3			41	7			51	368	2712
10								156	1135	4448

include 938

no-3-in-line problem. 769 755 938

RK Guy & P.A. Kelly, Jan 1968
U of Calgary Math Dept Research Report # 33.

n = 10 still coming off computer, S ≥ 81.

to appear to Can. Math. Bull soon, but not in this detail.

RKG
6-8-68.

R.K. Guy

The ~~??~~ No 3-in-line problem. TT4.

See also [G43]

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THE UNIVERSITY OF CALGARY

FACULTY OF ARTS AND SCIENCE / DEPARTMENT OF MATHEMATICS, STATISTICS AND COMPUTING SCIENCE

July 30, 1970

Neil J.A. Sloane
Bell Telephone Laboratories
Research and Development Unit
of the Bell System
Mountain Avenue
Murray Hill, N.J. 07974
U.S.A.

Dear Neil,

A brief reply as I am far behind with correspondence, having just returned from sabbattical.

Many thanks for the 4th(?) edition of Sequences and your kind acknowledgement. Thanks too for your letter of 22-24:7:70 and the corrections to research paper #9.

#9 was a "reprint" of Richard K. Guy, Dissecting a polygon into triangles, Note 90, Bull. Malayan Math. Soc. 5(1958), 57-60. It was only later I realized that D_n were the Catalan numbers. The originality was in the E_n calculation.

#11, "A theorem in partitions" was submitted to JLMS after Davenport, Rogers and Hansraj Gupta told me they thought it to be original, but the theorem turned out to be due to Glaisher. Some of the proofs were perhaps new, but I haven't attempted to publish it elsewhere.

0U3

#33, "The no-3-in-line problem". See Guy, R.K. and Kelly, P.A., The no-three-in-line problem, Canad. Math. Bull., 11(1968), 527-531. Also AMS Notices, 15(1968), 550. M.R. 39(1970), #129. Also, in Tutte, ~ **Nope!**
W.T. (editor) Recent Progress in Combinatorics, Academic Press, New York, 1969, page 337.

#8, "The crossing number of the complete graph" is a "reprint" of Guy, R.K., A combinatorial problem, Bull. Malayan Math. Soc., 7(1960), 68-72. (BMMS did not do offprints and had a very small and almost entirely local circulation). There is still a lot of mythology on this topic, but I now claim to have a sound proof (the first!) that $\nu(K_n)$ is what we conjecture it is for $n \leqslant 10$. I hope that a student, Roger B. Eggleton, and I can soon extend this to $n = 12$. I have also proved that $\bar{\nu}(K_n)$, the rectilinear crossing number, $= \nu(K_n)$ for $n \leqslant 7$, $n = 9$ and that $\bar{\nu}(K_8) = 19$. I think I can soon show $\bar{\nu}(K_{10}) = 63$. Papers will appear in the Proc. of the recent St. John's Univ. Conference and perhaps (with Eggleton) in J. Combinatorial Theory.

.../2

For the coarseness of the complete graph and complete bipartite graphs, see papers in Can. J. Math. 20(1968), 888-894 MR 37(1969), 1086-1096. Beineke and I have not tried to close the small gaps. We are currently looking at the coarseness of Q_n, the n-cube, but we may have to leave gaps there, too. $c(Q_n) = 0$ for $n \leqslant 3$, $c(Q_4) = 2$, $c(Q_5) = 4$ or 5, almost certainly the former. $10 \leqslant c(Q_6) \leqslant 13$, can probably prove $\leqslant 12$ and believe 10. Generally

$$\left[\frac{n}{4}\right] 2^{n-3} \leqslant c(Q_n) \leqslant \left[n2^{n-2}/7\right]$$

but we hope to improve both bounds.

Have seen Conway and Mike Guy since we last met. Can assure you they appreciate Sequences even if they haven't acknowledged.

Haven't yet seen Kenyon since I got back. Will leave a note reminding him to send a copy of thesis. Maybe I forgot to ask him; he is usually good about such things.

Glad to know your list has proved useful. I was sure it would be: I discussed such a project with Leo Moser some years ago. Met Knuth (again) in Stanford recently. Selfridge was giving a talk and I was travelling from Santa Cruz to Berkeley, so gave him a ride. Knuth was disappointed I was not Mike Guy as he wanted to discuss some work Mike had done with Conway.

Will try to write more if ever I get rid of the piles of paper. Best wishes to Graham, Gilbert, Berlekamp, Knowlton, Pollak, et al.

Yours sincerely,

Richard.

Richard K. Guy

RKG/vh

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THE UNIVERSITY OF CALGARY

FACULTY OF ARTS AND SCIENCE / DEPARTMENT OF MATHEMATICS, STATISTICS AND COMPUTING SCIENCE

July 30, 1971.

Dr. N. J. A. Sloane,
Bell Laboratories,
600 Mountain Avenue,
Murray Hill, New Jersey, 07974,
U.S.A.

Dear Neil,

Glad to hear you on the phone.

I am sending a copy of "The no-3-in-line problem" by separate mail. You will see line 10 has been added. If you have an original copy (not the Canad. Bull. version, but the Calgary preprint), then just add to the bottom of the table:

10	3	1	-	132	13	1	6	156	1135	4448

Send a copy of "A poke at a problem in the previous paper" if you get it into shape.

I am also sending a copy of "the nesting and roosting habits of the laddered parenthesis" which contains a plug for your book.

Very nice

All the best to Ron, Elwyn, Jessie, Jack,.... We also remember Klarner.

Sincerely,

Richard.

Richard K. Guy.

RKG:lh

Encl.

~~Why is [illegible] called the post-office function?~~

Also received soln of Sedláček's problem — nice work

755

Bell Laboratories

600 Mountain Avenue
Murray Hill, New Jersey 07974
Phone (201) 582-3000

August 2, 1971

Prof. P. A. Kelly
Department of Combinatorics
University of Waterloo
Waterloo, Ontario
CANADA

Dear Professor Kelly:

In 1968 Richard Guy told me the answers to the no-three-in-line problem for n ≤ 9:

page	n	2	3	4	5	6	7	8	9	10	11
769	S	1	1	4	5	11	22	57	51	156	1 found so far.
73 755	T	1	2	11	32	50	132	380	368	1135	
175 938	t	0	8	44	152	372	824	1544	2712	4448	

Could you please tell me if any further terms are known in any of these sequences? Thank you very much.

Yours sincerely,

Neil Sloane

N. J. A. Sloane

MH-1216-NJAS-ls

Aug 10/71

Enclosed are two papers on this topic. If you would like the actual configurations please drop me a line. At present I am finishing a paper on the generalization of this problem to an m × n grid.

Sincerely

Patrick A. T. Kelly.