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PHILIPS RESEARCH LABORATORIES

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CJB/AvR

14th October 1971

2880
~~2841~~

91

Dr. N.J.A. Sloane
Bell Laboratories
600 Mountain Avenue
MURRAY HILL, N.J. 07974
U.S.A.

Dear Dr. Sloane,

First of all, I have a correction to the values of b_{17} and d_{17} as given in my previous letter of 11 August. The correct values are one less, namely,

2881 $b_{17} = 3033$, $d_{17} = 15$.

Secondly, I have evaluated these contants for order 18. My result is:

2962 $b_{18} = 9519$, $d_{18} = 19$.

The numbers d_n are in agreement with Duijvestijn's thesis. His value for d_{19} is 58, but I cannot check this independently.

Yours sincerely,

C.J. Bouwkamp

SEP 1 1971

Dr. C. J. Bouwkamp
Goorstratt 10
Eindhoven,
THE NETHERLANDS

Dear Dr. Bouwkamp:

Thank you very much for your letter of August 11, 1971. It was very kind of you to send me all those numbers.

If you do work out the values of b_{18} and d_{18}, I would like to have them, but please do not take any trouble over it.

The sequence B_n of self dual c-nets I had already from the article by P. J. Federico (Jnl. Comb. Theory, 7, pp 151-161, 1969); but not A_n and C_n, which have now been added to my collection.

Thank you again for your help.

Yours sincerely,

ORIGINAL SIGNED BY

N. J. A. Sloane

MH-1216-NJAS-jl

Copy to
Mr. W. O. Baker

APPROVED:

H. O. Pollak

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August 11, 1971

Prof.Dr.CJB/JL

Dr. N.J.A. Sloane
Bell Laboratories
600 Mountain Avenue
MURRAY HILL, N.J. 07974
U.S.A.

Dear Dr. Sloane,

Thank you for your letter of July 28. I am glad to give the information wanted.

162 ~~2880~~ Your first sequence a_n can be extended with one term, since $a_7 = 1023$. This figure is due to A.J. Dekkers of our Computing Centre, obtained about one year ago.

The sequence b_n can be extended with two terms:

2881 $b_{16} = 957$; $b_{17} = 3034$.

I have the necessary information to determine b_{18}, but it would take me some time to get it from my list of simple imperfect rectangles of order 18. The difficulty is concerned with the phenomenon of "crossed" squared rectangles. My list of 9529 items may contain two or three duplicates, and I can find this only by hand since all reels have been erased.

As to the third sequence, I have found

2839 $c_{16} = 9016$; $c_{17} = 31427$; $c_{18} = 110384$.

As to your question about further interesting combinatorial sequences, I might suggest

d_n = number of simple imperfect squared squares of order n.

I found: $d_{19} = 58$

~~too short~~ 2962 $d_{13} = 1$; $d_{14} = 0$; $d_{15} = 3$; $d_{16} = 5$; $d_{17} = \cancel{16}$ 15, $d_{18} = 19$

The necessary information to obtain d_{18} is in my possession. Perhaps I shall let you know at a later moment what b_{18} and d_{18} are.

As other sequences of interest, I mention the figures coming from 3-connected planar graphs:

Handelsregister Eindhoven, no. 1910

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c-net

A_n = number of "3-connected planar graphs" with n edges
where duals are identified,
B_n = number of 3-connected planar graphs with n edges
that are self-dual,
C_n = number of 3-connected planar graphs with n edges
$C_n = 2\,A_n - B_n$;

n	A_n	B_n	C_n
6	1	1	1
7	0	0	0
8	1	1	1
9	1	0	2
10	2	2	2
11	2	0	4
12	9	6	12
13	11	0	22
14	37	16	58
15	79	0	158
16	249	50	448
17	671	0	1342
18	2182	165	4199
19	6692	0	13384
	2880	2841 ✓	2860 ✓

($B_{2m} = 0$)

Source: C.J. Bouwkamp, A.J.W. Duijvestijn & P. Medema,
Table of c-nets of orders 8 to 19, inclusive.
Philips Research Laboratories, Eindhoven,
Netherlands, 1960
Ms. of trimmed and bound computer output sheets in
two volumes each of 206 pp., 24 x 30 cm, deposited
in the UMT file.
See Book Review, Mathematics of Computation 24, 995-997
(1970).

Yours sincerely,

J Bouwkamp

Prof.Dr. C.J. Bouwkamp

JUL 28 1971

Copy to
Mr. W. O. Baker

APPROVED:

____
H. O. Pollak

Dr. C. J. Bouwkamp
Goorstratt 10
Eindhoven,
THE NETHERLANDS

Dear Dr. Bouwkamp:

I should be most grateful if you would give me information about some combinatorial sequences. The first is the sequence

162

n	2	3	4	5	6	7
a_n	1	2	8	29	166	1023

✓

where a_n is the number of distinct polyominoes that can be made from n cubes -- are any more terms known in this sequence?

The other two are the sequences

2881
~~2662~~ 2839
l.c.
ω

n	9	10	11	12	13	14	15	16	17	18
b_n	1	0	0	9	34	104	283	957	303~~4~~3	
c_n	2	6	22	67	213	744	2609	9016	31427	110384

Which are the number of imperfect and perfect squared rectangles of order n . Again, can you please supply any more terms in these sequences?

I am collecting interesting sequences of integers for a book -- can you suggest any others?

Yours sincerely,

MH-1216-NJAS-jl

N. J. A. Sloane

TECHNISCHE HOGESCHOOL TWENTE

ONDERAFDELING DER TOEGEPASTE WISKUNDE

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

ONDERWERP: KENMERK: TW71/I/142 ENSCHEDE, August 12th 1971

Dear Dr. Sloane,

Just back from vacation I got your letter. I have searched my papers for the information you requested. Although I have listings of all simple-perfect and simple-imperfect squared rectangles of orders up to and including 19 some counting would be necessary.

I asked Prof. Bouwkamp whether he had the information immediately available. It appeared that he is preparing a letter to you in which you can find all necessary information.

With best regards,

Duijvestijn

Prof.dr.ir. A.J.W. Duijvestijn.

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