

PHILIPS RESEARCH LABORATORIES
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CJB/AvR

CABLE ADDRESS
PHILAB EINDHOVEN
14th October 1971

462
2881
2962
2839-41
→ 2880
~~2841~~

791

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,

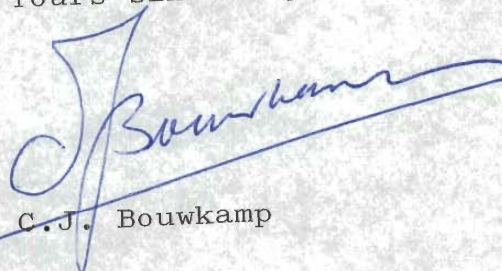
$$b_{17} = 3033 \quad , \quad d_{17} = 15.$$

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

$$b_{18} = 9519 \quad , \quad d_{18} = 19.$$

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-j1

Copy to
Mr. W. O. Beker

APPROVED:

H. O. Pollak

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Prof. Dr. CJB/JL

CABLE ADDRESS
PHILAB EINDHOVEN

August 11, 1971

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.

Your first sequence a_n can be extended with one term, since $a_7 = 1023$. This figure a_n 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: ✓

$b_{16} = 957; \quad b_{17} = 3034.$

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 ✓

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

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:

$d_{13} = 1; \quad d_{14} = 0; \quad d_{15} = 3; \quad d_{16} = 5; \quad d_{17} = 15, \quad d_{18} = 19, \quad d_{19} = 58$

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:

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- 2 -

A_n = number of "3-connected planar graphs" with n edges
where duals are identified, c-net
 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 ✓ ($B_{2m} = 0$)	2840 ✓

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,



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

n	9	10	11	12	13	14	15	16	17	18
b_n	1	0	0	9	34	104	283	957	3034	
c_n	2	6	22	67	213	744	2609	9016	31427	110384

2881

~~2862~~
2839

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,

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N. J. A. Sloane

(l.c.)
w



TECHNISCHE HOGESCHOOL TWENTE

ONDERAFDELING DER TOEGEPASTE WISKUNDE

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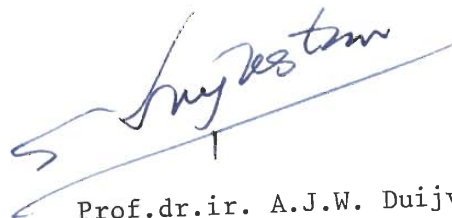
ONDERWERP: KENMERK: TW71/I/142 ENSCHEDE, August 12th 1971

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,



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