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Guy letter

85:01:19

Add to Many sequences

THE UNIVERSITY OF CALGARY

Faculty of SCIENCE
Department of MATHEMATICS & STATISTICS

2500 University Drive N.W., Calgary, Alberta, Canada T2N 1N4

Telephone (403) 284-5202

85:01:19

Dr. Neil J.A. Sloane,
AT&T Bell Laboratories, Room 2C-376
600 Mountain Avenue,
Murray Hill,
New Jersey 07974. U.S.A.

Dear Neil,

Here are 5 sequences I didn't find in the Good Book [later: found the fifth, in a different context, in the supplement: 469·5. It must be older?]

1. Number of positions in Mu Torere with centre not occupied. Same as number of necklaces you can make with n white & n black beads

1 2 3 8 16 50 133 440 1387 4752 16159...56822..

[turning over not different - cf. Sloane §3.6]

(this *can* be calculated from Hazel Perfect, Math. Gaz. 40 (1956) 45-46, or, I'm told, from M. Eisen, Elem. Comb. Anal., Gordon & Breach, NY, 1969, pp.199-208, but I haven't checked this).

2. Number of positions in Mu Torere with A in centre (or with B in centre). Same as number of necklaces with n white, n-1 black & 1 glass bead.

$$\frac{1}{2}\left\{\binom{2n-1}{n} + \binom{n-1}{\lfloor n/2 \rfloor}\right\}$$

1 2 6 19 66 236 868 3235 12190 46252 176484 ...676270--

3. Total number of Mu Torere positions (1. + twice 2.)

3 6 15 46 148 522 1869 6910 25767 97256 369127 ... 1409362 ---

4. Number of winning positions for A (or for B) in Mu Torere. Same as number of necklaces with n white, n-3 black & 1 glass bead.

0 0 1 3 12 45 170 651 2520 97502 37854 .147070 ---

5. An auxiliary function $\frac{1}{2n}\sum_{d|n} \varphi(d)\binom{2n/d}{n/d}$, which can be used in calculating 1.

1 2 4 10 26 80 246 810 2704 9252 32066 .56360 ---

[turning over different]

References for the above, I hear you cry? I've just refereed a paper by Marcia Ascher: Mu Torere; an analysis of a Maori Game, which will probably

appear in Math. Mag. within a finite time (by end of this year?) possibly with yours truly as coauthor.

Best wishes for 1985

Yours sincerely,

Richard

RKG:jw

Richard K. Guy.

P.S. Have you purchased your copy of Son of Revnum yet? R

P.P.S. Sequence 195.5 extends: ...32,33,38,94,166,324,379,469,... 2982

and 342.5 : ... 41,73,77,116,154,320,340,399,427,...

(Math. Comput. 38(1982) 639-643). R 2981

AT&T
Bell Laboratories

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

N. J. A. Sloane
Room 2C-376

February 27, 1985

Professor Richard Guy
Faculty of Science
Department of Mathematics and Statistics
The University of Calgary
2500 University Drive, N.W.
Calgary, Alberta
CANADA T2N 1N4

Dear Richard:

Thank you very much for your letter of January 19 and the lovely sequences. One day (not soon) there will be a second edition. Enclosed are some recent things.

Best regards,

NJAS:mj

N. J. A. Sloane

Encs.
As above