A6841 A6840

A11

Scan

A5313

– A5516

anne Penfold

~~Street~~

~~letter~~ to me

~~2~~ pages (~~one~~ 3 is small!)

1+3=4

Sequences

A0011 & A5513 A6840 - 5516

f91

THE UNIVERSITY OF NEWCASTLE
NEW SOUTH WALES, 2308
TELEPHONE 68 0401
DEPARTMENT OF MATHEMATICS
EXT.

just visiting (permanent address still U. of Qld).

Dear Dr. Sloane,

Enclosed paper (to appear in J. Austral Math Soc) contains at least one of the sequences in your catalogue, namely #114 (p.41, Handbook of Integer sequences). This is our sequence $\Sigma = 1 + T(n)$ where $T(n)$ = number of twills which can be woven on a loom with n harnesses. Note that term 18 of this sequence should be 3914.

Yours sincerely

Anne Street

[HOST72]

5513, 6840

Conference Notes

Table 2. $T(n)$ = no. of n-harness twills

= no. of binary sequences length n up to necklace equivalence

Gilbert & Riordan have recorded this to $n = 20$.

We have gone to $n = 20$ by taking

$$1 + T(n) = \sum_{k=0}^{\lfloor n/2 \rfloor} T(n, 2k),$$

where $T(n, 2k)$ = # of n-harness twills with $2k$ breaks

= # of length n binary sequences up to necklace equivalence, where the sequence has ...01... or ...10... (Changing given thread from one side to the other of a fabric is called a "break" by weavers.)

Table 3 $B(2k)$ = # of balanced twills of period $2k$ = # of binary sequences of period $2k$ with k 0's & k 1's per period (up to necklace equivalence)

$\int 91$ **Conference Notes** 6840
6841

Here the sequences we have found a reasonable number of terms for are in Table 8.

- $F_b(n, k)$ = # of equiv. classes of balanced binary sequences of length n, with maximum float length k ~~and~~

Maximum Float length = maximum number of consecutive symbols of same value

e.g. 100000101 has max float length 5.

(again a weaving term)

f91

Conference Notes

6841

Permutation matrices are classified here as ways to tile the plane, where equiv. classes are found by allowing:

- complementation (for general sequences — I guess not for perms of any length);
  translation; / cyclic shifts;
  rotation; reversal;
  reflection;
  finite sequence of the above.

Equiv. classes in Table 2, page 404

If you are a weaver anyway, please ignore my comments. If not, then floats, breaks & the idea of damask as a tensor product may be strange.

Anne Street

18-6-91