

# A CALCULATED DISPLAY

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The numbers which appear on the LCD of a calculator are made of a series of straight-line segments. For the purpose of the current exercise, I ignored (a) the gap junctions between the straight-line segments and (b) the fact that the numbers are displayed at an angle. The game is to turn the ten numbers 0,1,2,3,4,5,6,7,8 and 9 on the calculator display into words. To do this, I started with a three-by-five grid of 15 cells, the smallest possible grid for the exercise. When drawn on the grid, each number occupies specific cells. Among them, the ten numbers use 13 of the 15 cells, indicated by 0s in Figure 1. The two inactive cells have a cross (X).

My aim was to assign a different letter to each of the 13 active cells such that the letters in the cells covered by a particular number could be rearranged to make a word. It follows that all ten words will be heterograms. The number 8, which incorporates the basic structure for the other nine numbers, occupies 13 cells. It seemed likely that all five vowels might appear in a 13-letter heterogram, so that is where I begin my search. Then I concentrated on those words with consonants which looked amenable to being involved in transposals. One such consonant combination, CGMNPRTS, together with the five vowels, made the word PNEUMOGASTRIC. By default, this had to be the number 8 word. Now I needed three 12-letter words for 0, 6 and 9. PNEUMOGASTRIC produced just three 12-letter words, and only two of them contained the letter U. No choice--not an auspicious start! Immediately U had to be assigned to the central cell on the grid, involved in the numbers 6 and 9, but not in 0. The only difference between the 6 and the 9 words letterwise is that one has the letter G whereas the other has the letter S, so G and S had to occupy cells in which the numbers 6 and 9 did not overlap. From then on it was a case of trial and error.

Inevitably, I found several slightly different letter arrangements which made words for all but one of the numbers (specifically, the number 2 or the number 3). In the end I succeeded (Figure 2), so that it wasn't necessary to start again with another 13-letter word! My word offered nine transposals for the number 1 (5 cells), four transposals for the number 4 (9 cells), and seven transposals for the number 7 (7 cells).

0 = ACROPIGMENTS (Stedman's)	5 = PTEROCANIUM (Nomenclator Zoologicus)
1 = TERPS (OED)	6 = PRAECOGNITUM (OED)
2 = PUNCTOGRAMS (Stedman's)	7 = PENTARSIC (OED)
3 = POMACENTRUS (OED, pomacentroid)	8 = PNEUMOGASTRIC (OED)
4 = PERTUISAN (OED)	9 = PIESTOCRANUM (Nomenclator Zoologicus)

Note that Row 1 forms CAR, Row 3 forms PUN, Row 5 forms TOM, and Column 1, GAMIN.

FIG 1

0	0	0
0	X	0
0	0	0
0	X	0
0	0	0

FIG 2

A	C	R
I		S
N	U	P
G		E
M	O	T

0

A	C	R
I		S
N		P
G		E
M	O	T

1

		R
		S
		P
		E
		T

2

A	C	R
		S
N	U	P
G		
M	O	T

3

A	C	R
		S
N	U	P
		E
M	O	T

4

A		R
I		S
N	U	P
		E
		T

5

A	C	R
I		
N	U	P
		E
M	O	T

6

A	C	R
I		
N	U	P
G		E
M	O	T

7

A	C	R
I		S
N		P
		E
		T

8

A	C	R
I		S
N	U	P
G		E
M	O	T

9

A	C	R
I		S
N	U	P
		E
M	O	T