# MAGIC WORD SQUARES: A CHALLENGE

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Word Squares, as WW readers know, are square stacks of equal-length words that read the same across and down--or a different set of words across and down in the case of the much rarer double word squares or blankless crosswords. Magic Squares on the other hand are square stacks of *numbers* where each row, column and diagonal adds up to the same sum. As a challenge to readers I suggest combining these two concepts using alphanumeric or gematric values for the letters (A=1...Z=26). Dave Morice in the February 1992 Kickshaws (92-52) introduced a similar concept to Word Ways called German squares or "sum squares", which Leonard Gordon in May 1993 (93-114) blitzed with twenty-two such five-squares and several four-squares, two being palindromic. But these squares were not "magic" in the traditional sense as the common sums applied only to the rows and columns, not the diagonals. Is it possible to achieve the latter agreement as well? Yes, in the "easy" case of three-squares. Yet even this, my best example, has a couple of uncommon words.

| Y A M | 25 1 13 |
|-------|---------|
| A M Y | 1 13 25 |
| M Y A | 13 25 1   common sum 39 |

Amy is a proper name but is also a (lower-case) legal term meaning friend, a variant of ami. Mya is a type of clam. Both are in Web-3. This square is not doubly magic, however, since the diagonals are not words. But that shouldn't detract from it. No word squares I'm aware of have words as diagonals. Yet with more latitude, allowing abbreviations and proper names, this one *is* doubly magic. MMM is the acronym for the Scotch Tape maker and Yma is the name or pseudonym of singer Yma Sumac, famous for her many-octaves range.

Allowing abbreviations in the Cassell Dict. of Abbreviations by David Pickering 1996 (CDA) makes for three more such squares, the third of which is also doubly magic.

| A W L | S I N | O I L |
|-------|-------|-------|
| W L A | I N S | I L O |
| L A W 36 | N S I 42 | L O I 36 |

WLA stands for (British) Women's Land Army (also in Macquarie Dict. 2001), NSI is (US) National Security Information, ILO, in lieu of (also in Web-3); LOI, lunar orbit insertion; OLI (Oli.), the Oligocene epoch in geology; LLL, low-level logic and two other meanings in CDA.

All four of these squares are cyclical permutations (circular transposals), which ordinarily produce imperfect squares (eg, TEA EAT ATE) that fail because the right-to-left diagonals aren't equal to the other linear sums. These here are perfect because they use a letter for that leftward diagonal that is a third of the sum of all three letters.

This note only covers simple cyclical three-squares since its main intent is to present a challenge-- to Mike Keith and other computer power jockeys--to find the largest magic word square. Even a non-cyclic three-square would be impressive if doubly magic and not dependent on abbreviations. I mention Mike in particular because his awesome Chemical Squares (WW 04-8) inspired this note--even though (or rather *because*) his so-called squares are neither word nor magic squares, just two lists blocked out as squares. (Yet they are indeed magical!)