

MARTIN MAGIC FOR G4G14

by Lacey Echols and Jeremiah Farrell

The magician asks the subject to place the following nine words in a 3x3 grid so that each row and column anagrams into MARTIN. These nine are supplied on discs. An, At, In, Ir (iridium), It, Mn (manganese), Mr, Mt (meitnerium), Ra (radium). A correctly formed grid will be what Leonard Euler called “semimagic”.

The subject is now instructed to turn the disc over and to carefully interchange any two rows or any two columns as often as they wish. Of course the interchanges are such that each row or column will still spell MARTIN. Suppose the 3x3 has finally become, for example, as in Figure 1.

The magician says “If you were to give me two discs in, say, a row I would be able to easily name the third in the row.”

“Instead”, he asks, “I want you to choose any three discs in the grid but to make it hard on me make sure they are each from a different row and column – that is, no two in the same row or the same column.” The subject chooses three such and places one face down and hands the magician the remaining two. The magician then immediately and correctly names the face down third disc.

METHOD. The chosen three will always have exactly one letter in common and all the others different. In fact the nine entries can be represented in base three arithmetic where A=0, I=1, M=2, and T=0, R=3, N=6. This makes the pairs become the grid in Figure 2. This suggests that the magic can be done with these numerical discs as well.

EXAMPLE. Supposes the subject selects from the words in Figure 1 the three Mt, Mr, Mn so that M is the only common. With numbers these would be 02, 32 and 62 with 2 common. The magician has memorized the associations and can after practice quickly name the missing disc. For MARTIN the magician memorizes AIM and NRT. That is, the common letter is noted and the opposite set of three are the matches.

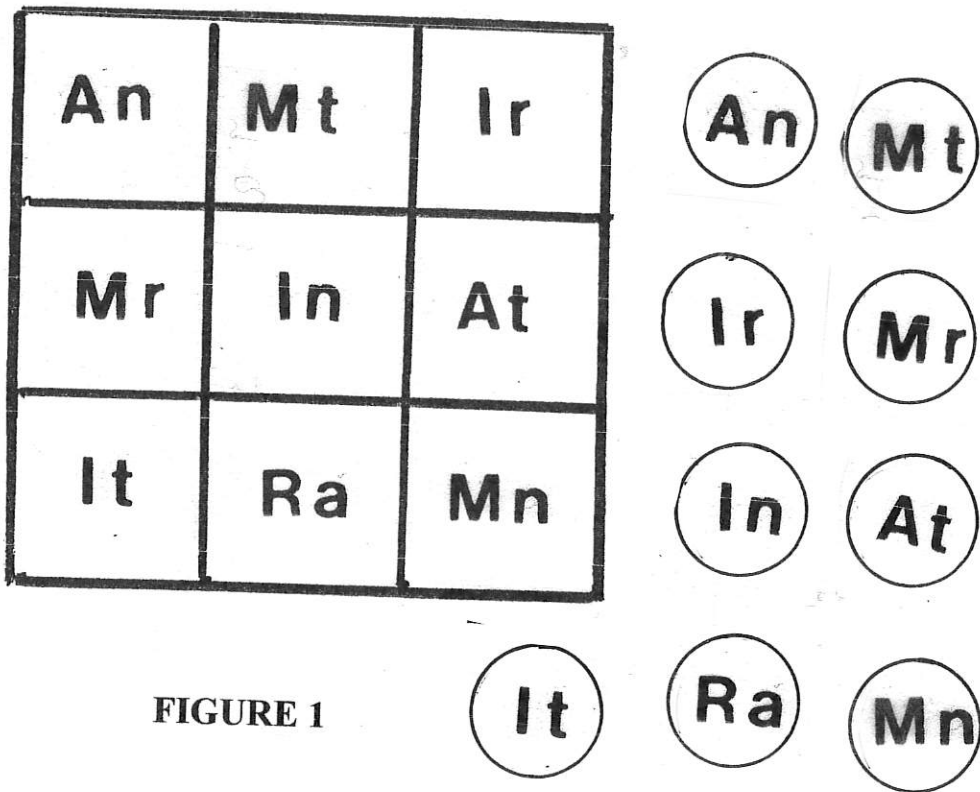


FIGURE 1

60	02	31
32	61	00
01	30	62

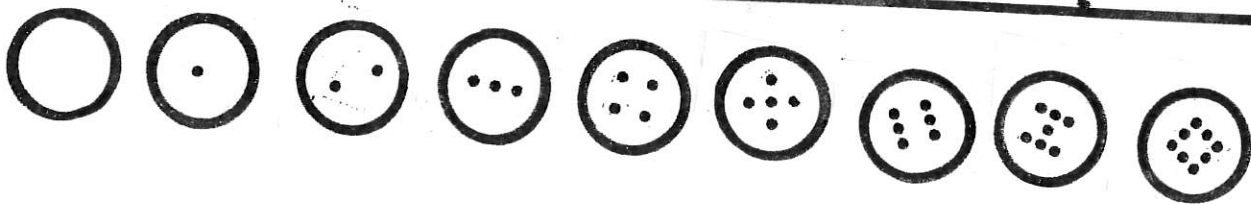
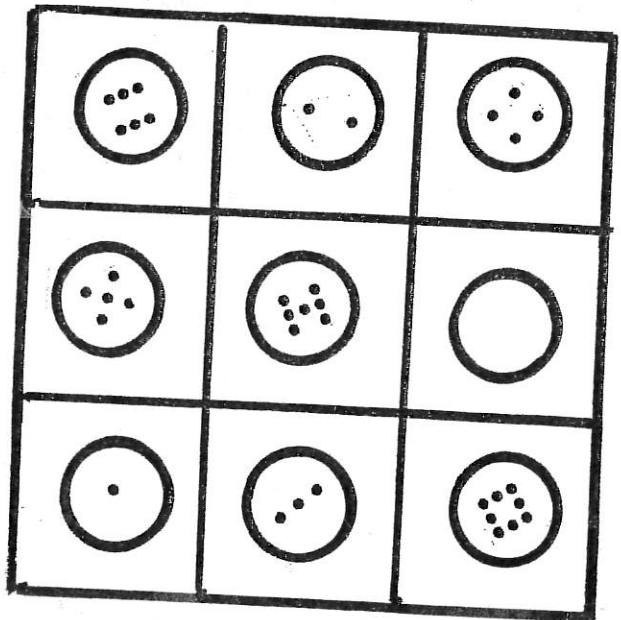


FIGURE 2