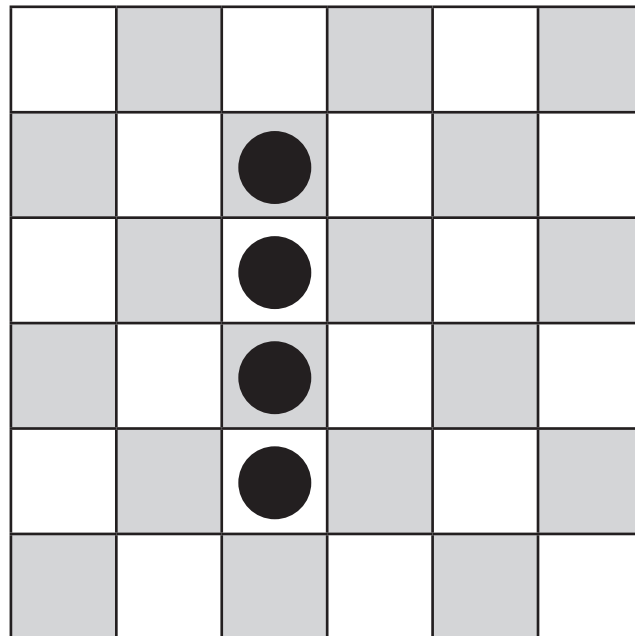


MATHMAG

1. SPATIAL REASONING

Four counters are placed in a line on a 6 x 6 board so that every square on the board is in line horizontally, vertically, or diagonally with at least one counter.

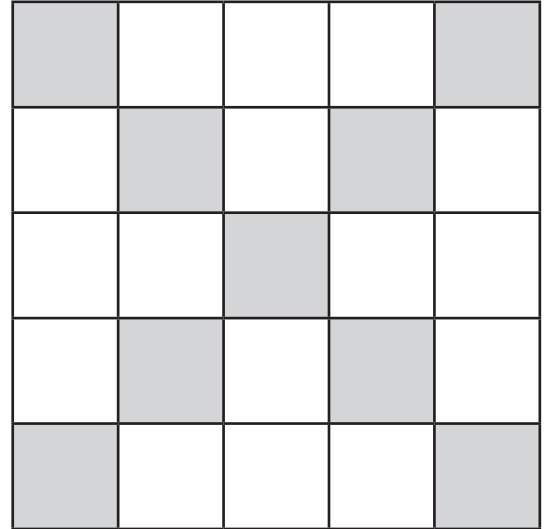


How many different ways can the four counters be placed in a straight line where every square is in line with a counter?

2. ODDS AND EVENS

You need 13 counters

- Draw a 5 by 5 grid.
- Put counters on it.
- You can put only one counter in each space.

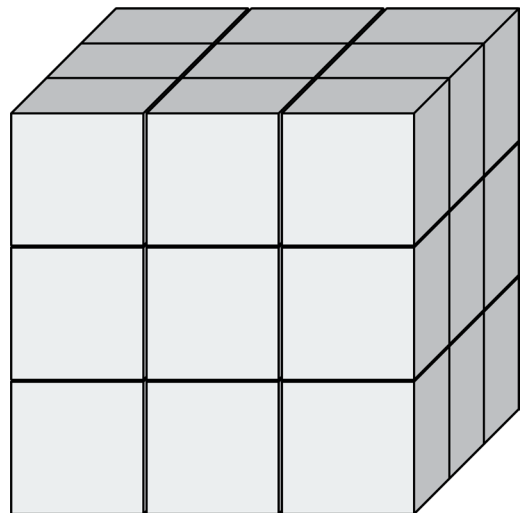


Place 13 counters. Get an **odd** number of them in each row and column and the two main diagonals.

Place 10 counters. Get an **even** number of them in each row and column and the two main diagonals.

3. MULTICOLOURED CUBE

Arrange 9 red cubes, 9 blue cubes and 9 white cubes in a large 3 x 3 x 3 cube so that no row or column of cubes contains two cubes of the same colour.

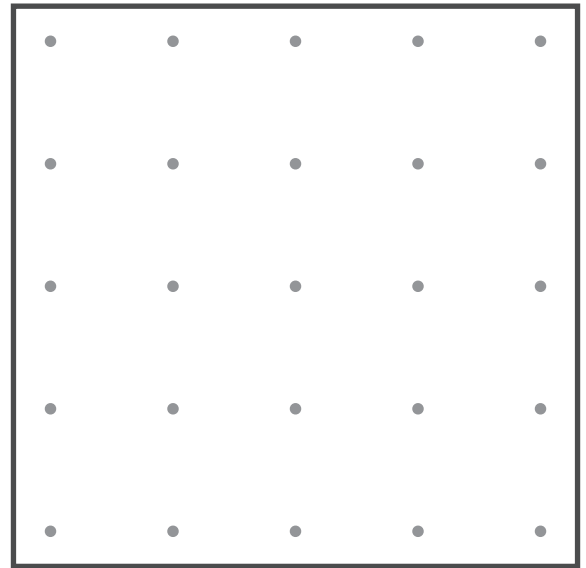
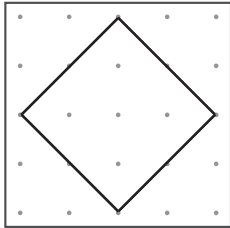


4. GEOBOARD SQUARES

A 4x4 Geoboard is made up of 16 pins. How many squares can you find where some of the pins (dots) form the vertices of the square?

Hint: think outside of the square.

Consider:



5. VOWELS

This diagram contains each of the five vowels - A, E, I, O, U - five times.

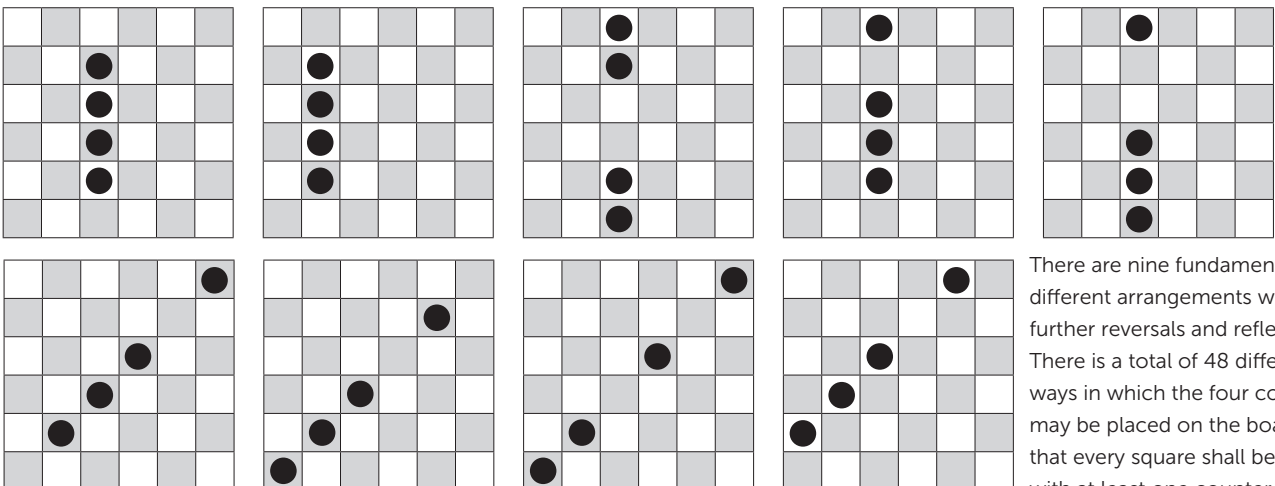
Show how to cut the 5 × 5 square into five different pieces, each of which contains all the vowels once only.

When you have solved this one try, making a similar one for yourself.

E	A	I	O	I
U	E	U	E	O
O	I	A	O	A
I	U	E	A	I
A	O	U	E	U

ANSWERS

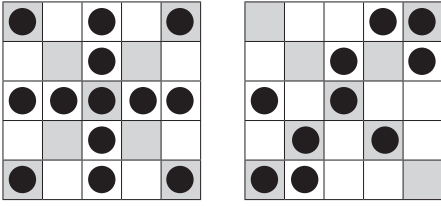
1:



There are nine fundamentally different arrangements with further reversals and reflections. There is a total of 48 different ways in which the four counters may be placed on the board, so that every square shall be in line with at least one counter.

ANSWERS

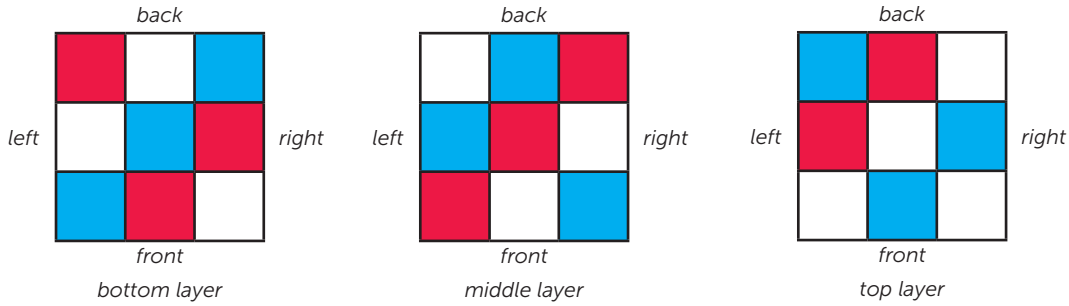
2: Several solutions are possible. For example:



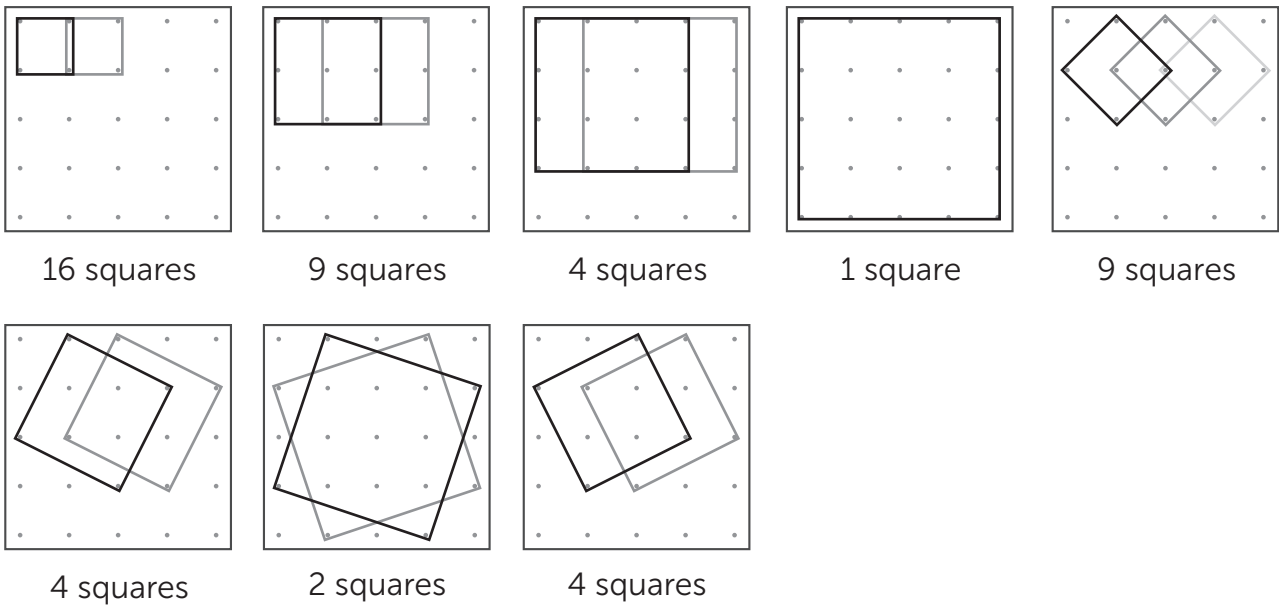
5:

E	A	I	O	I
U	E	U	E	O
O	I	A	O	A
I	U	E	A	I
A	O	U	E	U

3: There are many correct solutions. Here is one:



4:



The Mathematical Association of Western Australia Inc.

ABN: 83 179 618 286

Street: 12 Cobbler Place, MIRRABOOKA 6061

Postal: P. O. Box 440, MIRRABOOKA 6941

Phone: 08 9345 0388

Web: www.mawainc.org.au



www.facebook.com/MAWAinc



@MAWAinc



MAWAinc