

The Art of Magic Squares

Examples:

8	1	6
3	5	7
4	9	2

3x3

17	24	1	8	15
23	5	7	14	16
4	6	13	20	22
10	12	19	21	3
11	18	25	2	9

5x5

Directions: (for odd magic squares)
Move 1 square diagonally each time (↗)
Start in the center square of the top row

- If move goes off the board, continue on the opposite side
- If move goes to a square already occupied, place the number on the square below the previous number

Think About it:

- Look at the central column of each magic square. Notice anything interesting? Why would this occur?
- Look at the diagonals of each magic square. Notice anything?
- What about 4x4 and other even magic squares?
- Will there always be a "proper" magic square for all $n > 2$?
- Why it is impossible to construct a 2x2 magic square?

Speed Math: Squaring 2-Digit Numbers (the Binomial Approach)

Take d^2 and let $d = 10a \pm b$ for integers a, b

$$d^2 = 100a^2 \pm 20ab + b^2$$

This makes the value much easier to calculate.

Note: There are separate tricks for $b = 5$ or $b = 1$.