

Magic Squares

Magic Squares was a game greatly enjoyed by Benjamin Franklin; he would create elaborate 16 x 16 squares “to avoid weariness.”

The magic square consists of numbers arranged in a square so that all rows, columns, and usually the two diagonals will add up to the same sum. If the square is 3 x 3 then one can only use the numbers 1 –9 once in each square to total the same sum.

If students succeed at 3 x 3, try a 4 x 4 with the numbers 1—16. Answers to two of the grids on the **Magic Square sheet** are below.

MATERIALS:

- Magic Squares sheet

NOTE: With an odd number of squares, the center number is always the average of all the two other numbers in the column, row or diagonal.

| | | |
|---|---|---|
| 8 | 1 | 6 |
| 3 | 5 | 7 |
| 4 | 9 | 2 |

 =15

| | | | |
|----|----|----|----|
| 16 | 3 | 2 | 13 |
| 5 | 10 | 11 | 8 |
| 9 | 6 | 7 | 12 |
| 4 | 15 | 14 | 1 |

 =34

Notice how many ways there are to total 34. Ask students to find them; write the possibilities on the board.

Magic Squares

| | | |
|---|--|---|
| 8 | | |
| | | |
| 4 | | 2 |

= 15

| | | |
|---|--|---|
| 2 | | 7 |
| | | |
| 9 | | |

= 15

| | | | |
|---|----|----|--|
| 2 | | 11 | |
| | | | |
| | 12 | | |
| | | 10 | |

= 34

| | | | |
|----|--|----|----|
| 16 | | | 13 |
| | | 11 | |
| 9 | | | |
| | | | 1 |

= 34