Magic Squares

- This square is magic, because the total of all the rows, columns and diagonals is the same.
- Add all the rows, columns and diagonals to check. Write the answers in the circles.

6	5	10
11	7	3
4	9	8

- Fill in the empty boxes in these magic squares.

		5
8	6	
7		

7		
12	8	4

6		2
1	5	
		4

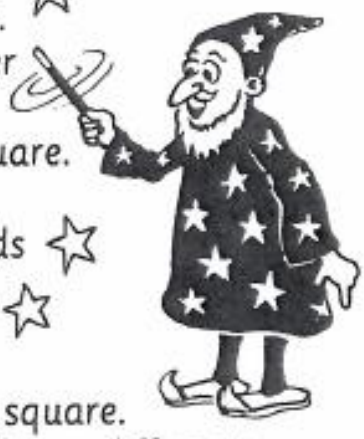
	9	4
	7	
	5	

12		
7		
8		6

15	10		6
	5		
14	11		
1	8		12

Play the Magic Game

- Draw a large 3 x 3 square.
- You need a set of nine cards, numbered from one to nine.
- One player has the odd-numbered cards, the other player has the even-numbered cards.
- The players take turns to place a card in a box of the square. The player with the odd-numbered cards goes first.
- The winner is the first player to make a line of three cards with a total of 15.



NOW

- Use your nine cards to make a non-magic square. This is a 3 x 3 square in which all the totals are different.

Magic Squares - Ideas Page

Aims

- To add three single-digit numbers.

Activities

- The children will require nine cards numbered one to nine for the activities.
- The common total of the numbers in a magic square is known as its 'magic number'.
- The smallest magic number (based on using positive whole numbers) on a 3 x 3 square is 15.

4	9	2
3	5	7
8	1	6

- The children should note the relationship between the magic numbers and the centre number of each square. The magic number is always three times the centre number. For example, if the centre number is 5, then the magic number is 15; if the centre number is 6, then the magic number is 18.
- The completed magic squares are:

3	10	5
8	6	4
7	2	9

7	6	11
12	8	4
5	10	9

6	7	2
1	5	9
8	3	4

8	9	4
3	7	11
10	5	6

12	5	10
7	9	11
8	13	6

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

The Magic Game

- Variations to the game include:
  - the first player to make a line of three cards to a total of 15 loses
  - change the target total, for example, to 14
  - instead of using cards numbered one to nine, use cards numbered two to ten or three to eleven.
- To explore a non-magic square, the children need the grid and the nine cards.
- One solution is:

3	2	9	14
6	1	4	11
7	5	8	20
17	16	8	21	12

Extension

- Investigate magic triangles using cards numbered one to six, or two to seven, or three to eight.