Worksheet W.A.18.1 Name _____

MAGIC SQUARE

Background:

A magic square is an *N* x *N* square of numbers with these characteristics:

1. Every number from 1 through N^2 must appear just once.
2. Every row, column, and diagonal must add up to the same total.

The following is an example of a 4 x 4 magic square:

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

Assume the following constant applies in this worksheet:

```
final int MAX = 4;
```

To solve this programming problem, several routines should be developed. This worksheet will ask you to write solutions to the following algorithms.

```
int sumRow (int[][] square, int row);
//  Precondition:  square is an initialized matrix, MAX rows x MAX columns
//                 0 <= row < MAX
//  Postcondition: returns the sum of the values in row

boolean unique(int[][] square)
//  Precondition: square is initialized with integers.
//  Action: Inspects every value in square, checking that each one is
//          a unique integer ranging from 1..MAX*MAX
//  Postcondition: Returns true if each value is unique from 1..MAX*MAX,
//                 otherwise returns false
```