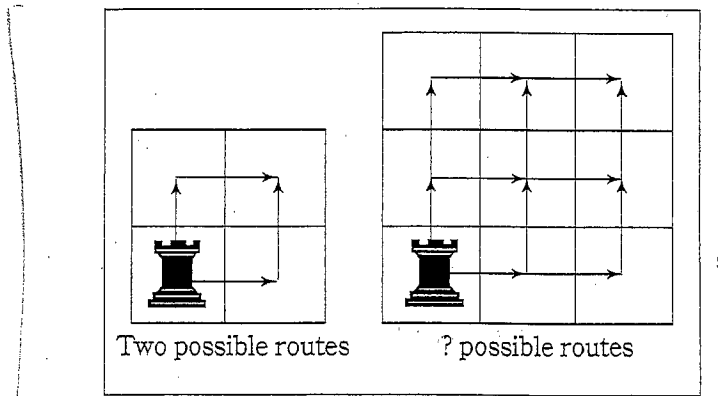


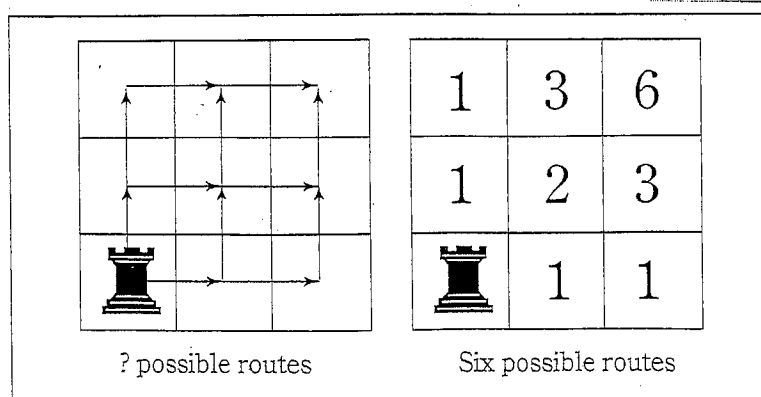
ULME  
Utah's Largest Math Event  
Secondary Level

In the game of chess, each piece has a direction it moves. The pawns move straight ahead one space at a time unless they are capturing another piece. The Queen has the most versatility being able to move several different directions. However, let's talk about the Rook or Castle. This piece can move vertically or horizontally. It can move 1 space or 8 spaces as long as it maintains the direction. On a regular chess board with 64 squares, the question is how many different paths can a rook take to get from one corner of the chess board to the opposite corner?

On a 2 x 2 or a 3 x 3 board the possible routes are illustrated below:



If you number the number of routes to each square it may be easier to see the number of possible moves:



Now it is your turn. How many different routes can the Rook take from one corner to the other corner?

The entries will be judged according to the following criteria.

**Reasoning/Justification:** Strategy selection shows conceptual understanding. Explanation is coherent, logical and clearly describes the process and solution. 20 points

**Representation:** Effective representation such as charts, graphs, tables, drawings, manipulatives, algebraic expressions used to demonstrate understanding. 10 points

**Conclusion:** Conclusion is logical and accurate. 10 points

**Vocabulary/Notation:** Appropriate mathematical vocabulary and notation is used. 5 points

**Appearance:** Product is legible and neat. 5 points

**Submissions:** All entries should be submitted to the following address:

Logan Toone  
Curriculum and Instruction  
PO Box 588  
Farmington, UT 84025

The deadline for entries is Dec. 15<sup>th</sup>, 2009.

Copy and attach this sheet as the cover sheet for all submissions:

Student Name: \_\_\_\_\_

Teacher Name: \_\_\_\_\_

Teacher email: \_\_\_\_\_

School: \_\_\_\_\_

District: \_\_\_\_\_