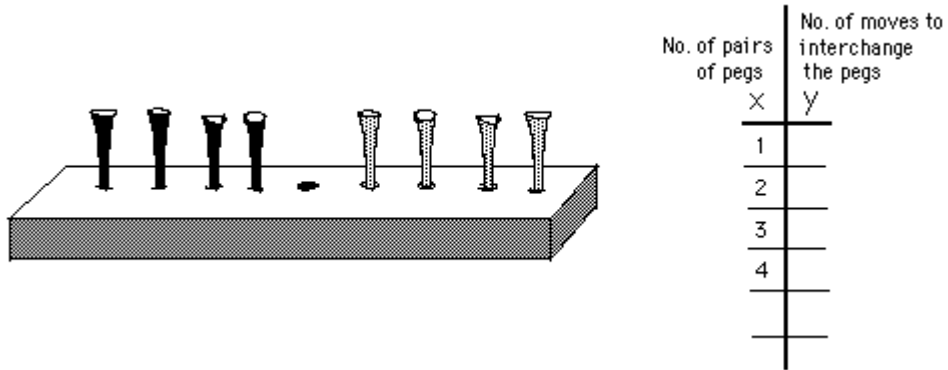


The Shuttle Puzzle

Consider the shuttle puzzle.

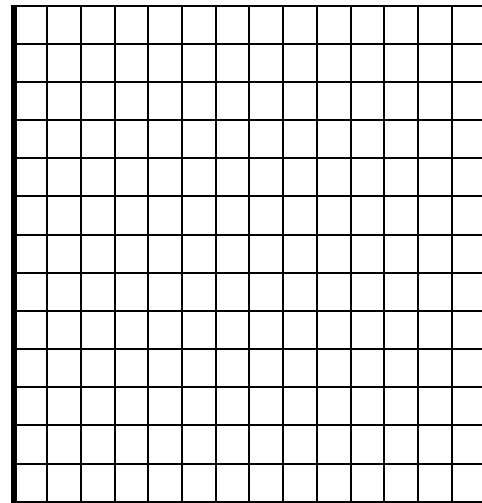


The object of this puzzle is to interchange the set of pegs (golf tees) of opposite colors. The rules are 1) you can move to a hole that's next to a peg; 2) you can jump, but **only one** peg and it must be of the **other color**, and 3) you can't move backwards. You must start with the empty space in the middle and end that way. You can use golf tees as I do or two different kinds of coins or bottle caps or pieces of colored paper as the pieces. Try it. It's not easy.

If you have difficulty, try it with two pegs on each side of the space in the middle. Then you can't use the two holes on the outside on each side. **Sometimes when a problem is hard, make up a simpler one, do that, then go to the harder one.**

When you can interchange 1, 2, 3 and 4 pairs, then make a table like the one shown above. Fill in the number of **pairs** of pegs and count the number of moves it takes to interchange the pegs. Put those numbers in the table. Graph these pairs of numbers. Then find a rule to relate y to x where y = the number of moves to solve the puzzle with x pairs of pegs. Graph these pairs of numbers.

y



x