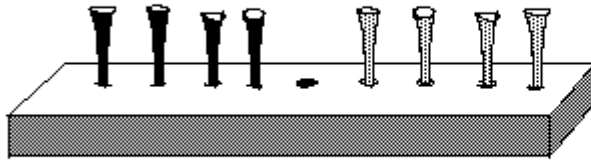


The Shuttle Puzzle

Consider the shuttle puzzle.

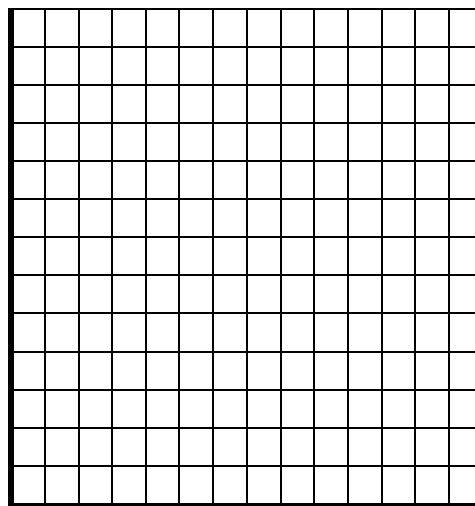


No. of pairs of pegs x	No. of moves to interchange the pegs y
1	
2	
3	
4	

The object of this puzzle is to interchange the blue and the red pegs (golf tees). 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.

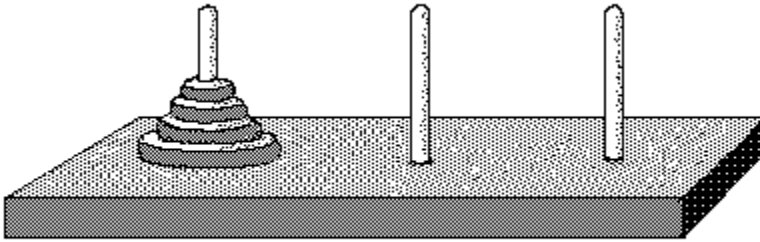
If you have difficulty, try it with 2 on each side of the space in the middle. Then you can't use the 2 holes on the outside on each side. **Sometimes when a problem is hard, make up a simpler one, do that, then go to the harder one.**

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. Then find a rule to relate x to y. Graph these pairs of numbers.



The Tower Puzzle

The object of this puzzle is to move the pile of discs (4 shown here) from any one peg to either of the other two. The rules are 1) you can only move one disc at a time; 2) You can't put a bigger disc on top of a smaller one. Look for patterns.



no. of discs x	min. no. of moves y
1	
2	
3	
4	
5	
6	

When you get good at moving 6 discs, then move the discs in the **minimum** number of moves. Make the table above right, and fill in the number of discs and the minimum number of moves.

Find a rule relating these numbers in the table.

Graph these pairs of numbers.

