THREE GLASS TRICK
Place three glasses on a table, as shown on the left (A). Your goal is to bring all three glasses to the upright position in exactly three moves, turning over two glasses at a time. A quick examination will reveal that this is easy to do—in fact, it can be done after any number of moves.
Once you succeed, turn all three glasses over to the inverted position, as shown on the right (B). Then challenge your friends to duplicate your feat.

(A)  (B)

Answer
Try as they might, they will fail. That is because turning over two glasses at a time changes the number of upright glasses by two or by zero. And although the number of upright glasses in the first setup was one, so that adding two gave you a total of three, the number of upright glasses in the second setup is zero. Changing two at a time will allow your friends to fluctuate between zero glasses and two glasses, but they will never get to three glasses. In other words, the first setup has an odd parity, while the second setup has an even parity. In both instances, turning over two glasses at a time will not change that parity.