Combinatorics. Quiz 5. Name	Time
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Show all work for full or partial credit. Put a box around your final answer in each part. Try the problem on your own before helping each other understand it.

1. Find the number of permutations φ of [7] such that $\varphi(2) \neq 3$, $\varphi(2) \neq 5$, $\varphi(2) \neq 7$ $\varphi(3) \neq 4$, $\varphi(3) \neq 7$ and $\varphi(5) \neq 4$, $\varphi(5) \neq 7$.

2. Find the number of permutations φ of [7] such that $\varphi(2) \neq 3, \varphi(2) \neq 5, \varphi(2) \neq 7$ $\varphi(3) \neq 4, \varphi(3) \neq 1$.

3. (a) How many ways can four non-attacking rooks fit on a 4 by 4 board if none can be on the main length 4 diagonal? (Hint: what sort of permutation would this be?)

(b) How about if none can be on either length 4 diagonal?