# MATH 113: DISCRETE STRUCTURES
## HOMEWORK 2

**Due:** Monday February 2 by 10pm.

*Remark* 1. This is homework on the content covered Wednesday of Week 1. In general, homework on content delivered during course meeting $n$ will be due at the start of course meeting $n+2$. You are encouraged to start working on the homework shortly after course meeting $n$ in order to have time to ask questions during office hours, the evening session, or via our Zulip channel.

*Remark* 2. Make sure to review the *Homework* portion of the syllabus before writing up your solutions! For instance: **you will only receive full credit if you provide full explanations**. Also, your **solutions should consist *solely* of complete sentences**. Simply providing the correct numerical solution does not suffice. See the *Mathematical Writing* appendix of the textbook for more tips.

*Problem* 1. At a Go tournament, there are eight players and four boards. In how many ways can the players sit down to play if

(a) We count the order in which pairs of players are seated at the boards, but do not care which side each player sits on? (Here A vs B, C vs D, E vs F, G vs H is the same as B vs A, C vs D, E vs F, G vs H but is different from G vs H, E vs F, C vs D, A vs B.)

(b) we count who sits on which side of each board, but do not care about the ordering of the boards? (In this version, A vs B, C vs D, E vs F, G vs H is different from B vs A, C vs D, E vs F, G vs H but is the same as G vs H, E vs F, C vs D, A vs B.)

*Problem* 2. In how many ways can King Arthur and his twelve knights (13 people, in all) sit down at the legendary Round Table in Camelot? (Since the table is round, we will not consider rotations of a given seating arrangement as different.)