

NDMI107 • 2024 • Homework 1 • Due 8 March

1. Express  $\sum_{i=0}^n \binom{n}{i}^2$  as a single binomial coefficient and justify the resulting identity in combinatorial terms: how does its left-hand side count the sets counted by the right-hand side?
2. Express  $\sum_{i=0}^n \binom{i}{k}$  as a single binomial coefficient and justify the resulting identity in combinatorial terms: how does its left-hand side count the sets counted by the right-hand side?