HW 1

STAT 461 FALL 2026

Problem 1. How many committees of 7 people, 3 from NV and 4 from CA, out of 4 from NV and 8 from CA? What if people from NV must be in the President, VP, and Secretary roles, and same people in different roles imply different committees?

Problem 2. Compute $\binom{10}{n}$ for $n = 2, 7, 9$.

Problem 3. Plug $x = 1$ and $y = -1$ in the binomial formula for $(x + y)^n$ and use this to prove that the number of subsets of $\{1, \ldots, n\}$ with even number of elements elements is equal to the number of subsets of $\{1, \ldots, n\}$ with odd elements.

Problem 4. Expand the brackets using the binomial theorem, calculating each coefficient up to a number: $(x - 2)^5$.

Problem 5. Anna, Brendan, Christine, Daniel and Emily form a band with 5 instruments: a piano, a flute, a trombone, a violin and a guitar. There is a rule that no two people can play the same instrument. Find the number of arrangements if each of them can play all the instruments. How does it change if they need Anna or Brendan for the trombone?