HW 5

STAT 461 FALL 2026

SOA exam P problems 23, 32, 48.

Problem 1. An insurance company has 12 houses, each is on fire with probability 10%. Find the probability that there are:

- no fires;
- at most one fire;
- three or more fires;
- exactly four fires;
- ten or more fires.

Problem 2. Consider a group of 20 students, 12 Californians and 8 Nevadans. What is the probability that out of 10 people randomly selected from this group, there will be 3 Nevadans?

Problem 3. Transportation to school for a rural county's seventy-six children is provided by a fleet of four buses. Drivers are chosen on a day-to-day basis and come from a pool of local farmers who have agreed to be on call. What is the smallest number of drivers who need to be in the pool if the county wants to have at least a 95% probability on any given day that all the buses will run? Assume that each driver has an 80% chance of being available if contacted.

Problem 4. Each year a college awards five merit-based scholarships to members of the entering class. We have a short list of eight men and ten women, all of whom seem equally deserving. If the awards are made at random from among the eighteen finalists, what are the chances that both men and women will be represented?