Math 109 Test Two

Time: 50 minutes
Total: 20 marks

Name: _____

1. [2 marks] A company car is valued at $y = 62,500 - 2370x$, where y is in dollars and x is the number of years after 2019.

a) In which year will the value be $\$22,210$?

b) What was the value in the year 2025?

2. [2 marks] At a certain company: 32% of employees are gym members, 40% of employees work in finance, and 18% of employees work in finance and are gym members. Find the probability that an employee who works in finance is a gym member.

3. [2 marks] Events E and F are independent.
Calculate $Pr(E)$ in each situation.

a) $Pr(E \cap F) = 0.56$ and $Pr(F) = 0.7$

b) $Pr(E|F) = 0.3$ and $Pr(F) = 0.4$

4. [3 marks] Four radio stations each randomly select one of 12 broadcast frequencies. What is the probability that at least two of the stations select the same frequency?

5. [3 marks] A box contains nine \$20 bills and seven \$100 bills. You pay \$30 and randomly draw a bill from the box. Let X be your net winnings (in dollars).

a) Find the probability distribution of X.

b) Find the expected value of X.

6. [4 marks] A telemarketer has a 12% chance of making a sale on each call. Find the probability that the telemarketer makes a sale on at most two of the next 20 calls.

7. [4 marks] Employees at a courier company follow procedure 93% of the time. When procedure is followed, 4% of packages are delivered late. When procedure is not followed, 15% of packages are delivered late. What is the probability that procedure was followed, given that a package is delivered late?