

MAT 271E Probability and Statistics HW2

Prof.Dr. Canan SARIÇAM : Due date: 01.12.2023

1. The phone lines to an airline reservation system are occupied 40% of the time. Assume that the events that the lines are occupied on successive calls are independent. Assume that 10 calls are placed to the airline.

- a. What is the probability that exactly 3 calls the lines are occupied?
- b. What is the probability that at least 1 call the lines are not occupied?
- c. What is the expected number of calls in which the lines are all occupied?

2. A particularly long traffic light on your morning commute is green 20% of the time that you approach it. Assume that each morning represents an independent trial.

- a. Over 5 mornings, what is the probability that the light is green exactly 1 day?
- b. Over 20 mornings, what is the probability that the light is green exactly 4 days?
- c. Over 20 mornings, what is the probability that the light is green more than 4 days?

3. The number of industrial injuries per working week in a particular factory is known to follow a Poisson distribution with mean 0.5. Find the probability that

- a. in a particular week there will be less than 2 accidents
- b. in a particular week there will be more than 2 accidents
- c. in a three week period there will be no accidents.

4. The number of misprints on a page of the Daily Mercury has a Poisson distribution with mean 1.2. Find the probability that the number of errors

- a. On page 4 is 2
- b. On page 3 is less than 3
- c. On first 10 pages totals 5
- d. On all 40 pages adds up to at least 3.