

HW Appendix

Basic Statistics

1. Hospital records from the past month indicate that following routine childbirth, 20 new mothers stayed 1 night, 50 stayed 2 nights and 30 stayed 3 nights. What is the average (mean) hospital stay for new mothers?

Basic Probability

2. DNA is composed of the purine nucleotides: adenine (A) and guanine (G); and the pyrimidine nucleotides: cytosine (C) and thymine (T). Consider an arbitrary 4-base sequence that contains one of each of the nucleotides in some order (e.g. AGCT). What is the probability that the two purines and the two pyrimidines are found together (i.e. adjacent)?

Conditional Probability

3. The table below gives the number and gender of patients who have visited a walk-in clinic with one of the following medical conditions (exclusively):

	Male	Female
Diabetes	175	155
Migraine	40	210

From the population of patients with these conditions at this clinic:

- What is the probability that a patient is female, given that the patient suffers from migraines?

Bayes Theorem

4. Let h represent the fact a patient has hepatitis. Let T represent a positive diagnostic test for hepatitis. Note: the test is imperfect (i.e. there may be false positives and false negatives). Suppose a patient has tested positive; we want to know the probability that the patient actually has hepatitis. Express Bayes formula in word form as it would apply to this scenario. For example, $P(T)$ in verbal form is: "the probability of getting a positive diagnostic test".