

Probability review

Why is probability important to statistics?

A brief answer: We look at the result of an experiment figure out:

What is the probability of getting this result by chance?

If this probability is low, we say the experiment had an effect on the outcome.

Make sure you understand this!

What is an *event*?

Know the basic definition of probability (what is $Pr\{E\}$?).

Remember:

$$0 \leq Pr\{E\} \leq 1 \quad \text{This is always true!!!}$$

Know how to calculate simple probabilities

For example, some of the dice or coin examples in the notes.

Know how to combine probabilities if the events are independent:

For example, $Pr\{Y_1=\text{heads and } Y_2 = 6\}$

Know how to construct and use probability trees.

Understand some of the related concepts like:

False positive, false negative, etc.

What is conditional probability?

How can we use conditional probability in probability trees?

You should thoroughly understand the homework problems on conditional probability.

What is the binomial coefficient?

What is a “factorial”?

For example, what is: 4! 6! 0!

What is the *binomial distribution* formula?

Be able to use and apply this formula.