Quiz 1 Study Guide

The quiz will be in-class on Friday, February 6. It will be 15 minutes long. *Some combination of the following problems will be on the quiz. You do not need to turn this study guide in; it is purely for your benefit. On the exam, please aim to answer the questions as precisely as you can (when grading your answers, I will be looking for mathematical definitions, not examples).*

Problem 1. What does it mean for two events A and B to be ***mutually exclusive***?

Problem 2. In order for a function $\mathbb{P}$ to be a ***probability measure***, it must satisfy three axioms. State all three axioms.

Problem 3. Let A and B be events, and assume that $\mathbb{P}[A] > 0$. What is the ***conditional probability of*** B ***given*** A?

Problem 4. What is a ***k-tuple***?

Problem 5. Describe the difference between a ***combination*** and a ***permutation***.

Problem 6. A ***set*** is an _____ collection of elements, all of which are _____.

Problem 7. What does it mean for two events to be ***disjoint***?

Problem 8. What is the ***sample space*** of an experiment? What is an ***event***?

Problem 9. What does it mean for a sequence of events $E_1, E_2, E_3, \ldots$ to be ***pairwise disjoint***?

Problem 10. Let A and B be events. Define the following terms

- the ***complement*** of A
- the ***union*** of A and B
- the ***intersection*** of A and B

Problem 11. What does it mean for to events A and B to have a ***positive relationship***? A ***negative relationship***?