Pre-class preparation

Please watch the video:

- Video: Set theory
- Additional optional reading: Section A.1.5 for review of cardinality of sets

Objectives

By the end of the day's class, students should be able to do the following:

- Define the sample space of an experiment.
- Perform and interpret operations (unions, intersections, complements) on sets.

Reflection Questions

Please submit your answers to the following questions to the corresponding Canvas assignment by 7:45AM:

1. Using your own words, describe the difference between **an event** and **an outcome**.
2. Three fair coins are tossed and the Heads or Tails result of each coin is recorded. If the outcome of interest is the sequence (i.e. order) of the results, what is the sample space of this experiment? What is the sample space if the outcome is total number of Heads?
3. Suppose that an experiment's sample space S is the real line. Let the following events A and B be represented by the following subsets of S. (The notation $\{x : ---\}$ denotes the set containing every point x for which the property presented following the colon : is satisfied.)

   $$A = \{x : 1 \leq x \leq 5\} \qquad B = \{x : x \geq 0\}$$

   Describe each of the following events as a set of real numbers:

   (a) A^c

   (b) $A \cup B$

   (c) $A \cap B^c$ (Note this is A and the complement of B, not the complement of A and B)

4. (Optional) Is there anything from the pre-class preparation that you have questions about? What topics would you like would you like some more clarification on?