MATH 120 In-class Activity
Day 6

Question 1. Determine a **set of objects** that is counted by each of the following quantities. You are NOT being asked to evaluate these quantities!!

(a) 2^5

(b) $19!$

(c) $P(8,3)$

(d) $5^2 - 5$

Question 2. At the local bookstore down the street they sell hardcover and softcover books. There are 280 hardcover books for sale, one tenth of which have a blue cover. There are 220 softcover books, 20 percent of which have a blue cover. How many of the books in the bookstore are either hardcover or has a blue cover? (This is an inclusive or.) Use a diagram to help you solve this problem. How would you represent this situation using set notation?

Question 3. A baseball roster has 28 players. Each game the coach sets the **lineup**—an ordering of **nine** players on the roster. Suppose Alex and Bianca are two of the players on the roster.

(a) How many lineups can the coach make?

(b) How many lineups include *at least one of* Alex and Bianca? (Hint: What is the complement?)

Question 4. Queens College students are choosing a new Student Council President using Approval Voting. In this system, voters decide whether they approve or disapprove of each candidate. The candidate with the widest base of approval (the most yes votes) becomes the president.

Suppose there are 15000 students voting for candidates A, B, and C and each student approves of at least one candidate.

Furthermore, suppose that at the end of the campaign, Candidate A earns 10000 approval votes, Candidate B earns 9000 approval votes, and Candidate C earns 8000 approval votes. (A wins!)

If 5000 students approved of both Candidate A and Candidate B (and possibly C),
6000 students approved of both Candidate A and Candidate C (and possibly B), and
4000 students approved of both Candidate B and Candidate C (and possibly A),

(a) How many voters approved of all three candidates?

(b) How many voters approved of candidates A and B but NOT candidate C?

(c) How many people approved only of candidate B and NEITHER candidate A nor C?