

CSI 30, Homework 9 on section 6.1

Due by Wed, May 3.

Please use lots of space and explain your answers, showing clearly any work you had to do. Each question is worth 3 points for a total of 21.

- (1) Suppose a tour group contains 10 people from England and 15 people from Scotland. They are staying in a hotel and want to complain to the manager.
 - (a) How many ways can they send one person from the group?
 - (b) How many ways can they send two people from the group where one is English and the other is Scottish.
- (2) Explain why there are 15625 possible 6 letter passwords using just V, W, X, Y, Z.
- (3) Let $S = \{8, 9, 10, 11, 12, 13, 14\}$.
 - (a) How many subsets does the set S have?
 - (b) How many subsets of cardinality 2 or more does the set S have? Explain.
- (4) Suppose ten people run a 100m sprint and they all finish with different times.
 - (a) How many possible winners are there?
 - (b) How many possibilities are there for the first two? Explain your answer.
- (5) In a group of 50 people, 20 own a cat and 15 own a dog. Also 7 own both a cat and a dog.
 - (a) How many of these people own a cat or a dog?
 - (b) How many don't own a cat and don't own a dog either.
- (6) Count the numbers from 1 to 280 that are divisible by 5 or 7 or both.
(A number is divisible by d means that d divides the number evenly - so the number is a multiple of d .)
- (7) How many bit strings are there of length 6 that start with 0 and don't contain two consecutive 0s? Use a tree diagram to find the answer.

If you get stuck on a question or aren't sure if you understand it:

- Go over the relevant class notes and section in the textbook.
- Check if you get the right answer for a similar odd-numbered question in the textbook (answers at the back of the book).
- Ask me about it after class.
- Come to my office hours: Tue 3 - 4, Wed 3 - 4 in CP 317.
- Go to the Math Tutorial Lab in-person in CP 303 or online.