

**MATH 327–Discrete Mathematics**  
**Counting Homework**  
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- (1) A 10 person committee is to be formed from a group of 18 women and 22 men. In how many ways can the committee be chosen if
  - (a) The committee must contain 5 men and 5 women.
  - (b) There must be at least 3 women.
  - (c) There must be more men than women.
- (2) At a local coffee shop, there are 10 different coffee drinks, 6 types of tea and 8 kinds of pastry you can order. If you plan to order a beverage and a pastry, how many ways can you place your order if
  - (a) you only drink tea.
  - (b) if you are allergic to items in 4 of the pastries.
- (3) How many 3 digit numbers contain 3 and 7 but do not contain 2 or 4?
- (4) An anagram is a rearrangement of a word. How many anagrams are there of
  - (a) BEAUTY
  - (b) CLARINET
  - (c) COTTONWOOD
- (5) Two dice are rolled how many ways can a total of 7 be rolled?
- (6) How many nonnegative integer solutions are there to  $x + y + z = 11$ ?
- (7) How many ways are there of choosing two fruits (not necessarily distinct) from an infinite supply of apples, pears, oranges, bananas and grapes?
- (8) In a group of 120 students, 70 are taking math, 90 are taking English and 5 are taking neither. How many are taking both math and English?
- (9) How many numbers between 1 and 100 are divisible by 2 or 3 or 5?
- (10) How many anagrams of BEACH start with B or end with H?
- (11) In the 100 meter sprint final at the London Olympics (assuming Usain Bolt, Asafa Powell and Christophe Lemaitre make it to the final), how many 1st through 3rd placements are there with either Usain Bolt receiving 1st, Asafa Powell receiving 2nd or Christophe Lemaitre receiving 3rd?