Math 421 Q1 Winter 2017 Homework 1

Due Jan. 19, 12pm.

Total 20 points.

QUESTION 1. (5 PTS) *A committee is to be chosen from among 8 scientists, 7 psychics, and 12 clerics. If the committee is to have two members of different backgrounds, how many such committees are there? Justify your answer.*

QUESTION 2. (5 PTS) *How many 5-letter words[1] either start with d or do not have the letter d? Justify your answer.*

QUESTION 3. (5 PTS) *In how many ways can we get a sum of 4 when two dice are rolled if the two dice are* **identical**. *Justify your answer.*

QUESTION 4. (5 PTS) *A composition of a positive integer n is an ordered list of positive integers (called parts) that sum to n. The four compositions of 3 are 3; 2,1; 1,2 and 1,1,1. Obtain a formula for the number of compositions of n. Justify your answers.*

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1. a "5-letter word" here just means an ordered list of 5 letters. For example abcde is a word.