CA1 - Counting, Sets, and Probability Basics

Add Instructions...

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1 Multiple Choice   5 points   Arranging TAs and Professors

Suppose we have 11 chairs (in a row) with 7 TAs, and Professors Sunny, Rainy, Windy, and Cloudy to be seated. What is the number of seatings where every professor has a TA to his/her immediate left and right?

- ● $\binom{6}{4} \times 4! \times 7!$
- ○ $11!$
- ○ $7! \times 4!$
- ○ $P(11, 4)$ or "11 picks 4"

2   Multiple Choice   5 points   Paring CECS and CBM Students

There are 66 CECS students and 77 CBM students taking part in an inter-school competition. If 10 CECS students and 10 CBM students are to be chosen and divided into 10 groups to compete with each other (one CECS student with one CBM student per group), how many pairings are possible?

- ● $\binom{66}{10} \times \binom{77}{10} \times 10!$
- ○ $\binom{66}{10} \times \binom{77}{10}$
- ○ $10!$
- ○   None of these above

3   Multiple Choice   4 points   Phone number

How many 7-digit phone numbers are possible, assuming that the first digit **can not** be 0 or 1?

- ○ 10^7
- ● 8×10^6
- ○ $10^7 - 9 \times 10^6$
- ○ $7!$

4 Numeric 3 points

A family has 6 children, consisting of 3 boys and 3 girls. Assuming that all birth orders are equally likely, what is the probability that the 3 eldest children are the 3 girls?

Please give your answer to 2 decimal places (e.g., 0.25).

0.05

5 Multiple Choice 3 points Concerts

A city with 6 zones has 6 concerts in a particular week. Assume the locations of the concerts are randomly chosen, with all possibilities for which concert occurred where equally likely. What is the probability that some zone had more than 1 concert?

- ⦿ $1 - \frac{6!}{6^6}$
- ◯ $\frac{6!}{6^6}$
- ◯ $\frac{1}{6}$
- ◯ None of these above