Extra Credit Questions
Math 1165
Fall 2013

1. How many different committees consisting of 4 members can be formed from a group of 5 people? Is it possible to have a different committee chair for each of these possible committees? Why or why not?

2. A high school has openings for 6 teachers. The school receives applications from 50 potential teachers.

    a. How many ways can the school hire the 6 teachers?

    b. Suppose of the 6 openings 2 are for English teachers, 3 are for biology, and 1 is for art. Of the 50 applicants, 15 have a background in art, 25 have a background in biology, and 10 have a background in English. If the school hires teachers with the appropriate backgrounds for each opening, how many ways are there to hire the 6 new teachers?

3. Suppose you have a fair 2-sided coin. You toss it 4 times and record the way it lands (heads or tails) each time. For questions (b) through (i), be sure to write the formula and not just the answer.

    a. What is the sample space for this situation?

    b. How many total outcomes are possible?

    c. How many ways are there to get exactly 3 heads?

    d. How many ways are there to get at least 2 heads?

    e. How many ways are there to get at least 2 heads and at least 1 tail?

    f. What is the probability to get exactly 3 heads?

    g. What is the probability to get at least 2 heads?

    h. What is the probability to get at least 2 heads and at least 1 tail?

    i. What is the probability to get at most 1 head?

    j. Compare the answer from part (g) and part (i). What is the relationship between these two probabilities? Explain why you got this relationship.