Review for the Final

Math 1680 Section 009

1. Find the SD for the following:

   a) 7, 7, 7, -2, -2

   b) 0, 0, 0, 0, 5

   c) 1, 2, 3, 4, 5

   d) 2, 2, 2, 3, 4, 4

2. A die is rolled 60 times.

   a) The total number of spots should be around _____, give or take _____ or so.

   b) The number of 6 should be around _____, give or take _____ or so.

3. A coin is tossed 100 times. Find the expected value and standard error for the number of tails. Estimate the chance of getting between 42 and 62 heads.

4. A coin is tossed 100 times. Estimate the chance of getting exactly 65 heads.

5. One hundred draws are made at random with replacement from the box containing four tickets numbered 1, 1, 5 and 7. The draws come out as follows: forty-five 1's, twenty-three 5's and thirty-two 7's. For each number below, find the phrase which describes it.

Number	Phrase
25	Observed value of sum of draws
5	Expected value of sum of draws
34	S.E. for number of 1's
350	Chance Error in sum of draws
50	Expected value of number of 1's
384	Expected value of number of 5's

6. Four hundred draws will be made at random with replacement from the box containing four tickets numbered 1, 2, 4 and 5.

   a) Estimate the chance that the sum of draws will be more than 1100.

   b) Estimate the chance that there will be fewer than eighty-five 4's.

7. Complete the following table for the coin-tossing game:

No. of tosses	E.V. for No. of heads	S. E for No. of heads	E.V. for percent of heads	S.E. for percent of heads
100				
400				
2500				
10,000				

8. A coin is tossed 1,000 times.

   a) Suppose it lands head 529 times. Find the expected value for the number of heads, the chance error, and the standard error.

   b) Suppose it lands head 484 times. Find the expected value for the number of heads, the chance error, and the standard error.

   c) Suppose it lands head 484 times. Find the expected value for the percentage of heads, and the standard error for percentage of heads.

9. A market survey organization carried out a survey in certain town with 25,000 households using a simple random sample of 500 households. Of the 500 sample households, 179 had one of more cars.

   a) The percentage of households in the town with two or more cars is estimated as _____; this estimate is likely to be off by _____ or so.

   b) If possible, find a 95%-confidence interval for the percentage of all 25,000 households with two or more cars.

10. A university has 30,000 registered students. As part of a survey, 900 of these students are chosen at random. The average age of the sample students turns out to e 22.3 years, and the SD is 4.5 years.

    a) The average age of all 30,000 students is estimated as _____. This estimate is likely to be off by _____ or so.

    b) Find a 95%-confidence interval for the average of all 30,000 registered students.

11. A box of tickets has an average of 100, and as SD of 20. Four hundred draws will be made at random with replacement from this box.

    a) Estimate the chance that the average of the draws will be in the range 80 to 120.

    b) Estimate the chance that the average of the draws will be in the range 99 to 101.