Stat 134: Section 4

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Problem 1

Suppose that in 4-child families, each child is equally likely to be a boy or a girl, independently of the others. Which would then be more common, 4-child families with 2 boys and 2 girls, or 4-child families with different number of boys and girls? What percentage of 4-child families will have 2 boys and 2 girls?

What is the distribution of the number of boys (girls) in a 4-child family?

Ex 2.1.2 in Pitman's Probability

Problem 2

Suppose you and I each roll 10 dice. What is the probability that we each roll the same number of sixes?

Ex 2.rev.8 in Pitman's Probability

Problem 3

A fair coin is tossed repeatedly. Consider the following two possible outcomes:

- 55 or more heads in the first 100 tosses

- 220 or more heads in the first 400 tosses

a. Without calculation, say which outcome is more likely. Why?

b. Confirm your answer to part a by calculation.

Ex 2.2.3 in Pitman's Probability

Problem 4

A fair coin is tossed 10,000 times. Find a number m such that the chance of the number of heads being between $5000 - m$ and $5000 + m$ is approximately $\frac{2}{3}$

Ex 2.2.12 in Pitman's Probability