## STAT 134: Section 5

*Adam Lucas*

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### Problem 1

An airline knows that over the long run, 90% of passengers who reserve flights show up for their flight. On a particular flight with 300 seats, the airline accepts 324 reservations.

a. Assuming passengers show up independently of each other, what (approximately) is the chance the flight will be overbooked?

b. Suppose people always travel in pairs. Will that increase or decrease the chance above?

*Ex 2.2.9 in Pitman's Probability*

### Problem 2

A cereal company advertises a prize in every box of its cereal. In fact, only about 95% of their boxes have prizes in them. If a family buys one box of this cereal every week for a year, estimate the chance that they will collect more than 45 prizes. What assumptions are you making?

*Ex 2.4.9 in Pitman's Probability*

*Problem 3*

A lot of 50 items (10 bad) is inspected by the following two stage plan: (i) A first sample of 5 items is drawn. If all are good the lot is passed; if two or more are bad the lot is rejected. (ii) If the sample contains exactly one bad item, a second sample of 10 more items is drawn from the remaining 45; the lot is rejected if two or more are bad. Otherwise the lot is accepted.

a.  What is the probability the sample is drawn and contains more than one bad item?

b.  Find the chance the lot is accepted.

*Ex 2.5.9 in Pitman's Probability*