

*Stat 134: Section 5*

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*September 13th, 2017*

*Problem 1*

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 2*

Three cards are dealt from a standard deck of 52 cards, containing 26 red cards and 26 black cards, Write down the probability that:

- a. the first card is red and the second two black;
- b. exactly one of the cards dealt is red;
- c. at least one of the cards dealt is red.

*Ex 2.5.2 in Pitman's Probability*

*Problem 3*

A deck of cards is shuffled and dealt to four players, with each receiving 13 cards. Find:

1. the probability that the first player holds all the aces;
2. the probability that the first player holds all the aces given that she holds the ace of hearts;
3. the probability that the first player holds all the aces given that she holds at least one;
4. the probability that the second player holds all the aces given that he holds all the hearts.

*Ex 2.5.3 in Pitman's Probability*

*Problem 4*

**Poker Hands.** Assume all  $\binom{52}{5}$  hands are equally likely. Find the probability of being dealt:

1. a straight flush (5 consecutive cards of the same suit);
2. four of a kind (ranks  $a, a, a, a, b$ );
3. a full house (ranks  $a, a, a, b, b$ );
4. a flush (5 of the same suit, not a straight flush);
5. a straight (5 consecutive ranks, not a flush);

*Ex 2.5.12 in Pitman's Probability*