3. Shot in the back while playing poker, Wild Bill Hickok's final hand was a pair of aces

and a pair of eights, now known as the dead man's hand. How many different dead

man's hands exist?

$\binom{4}{2}^2 * 44 = 1584$

5. What is the probability that a five card hand will contain at least one of each suit?

$p = \frac{4\binom{13}{2} * 13^3}{\binom{52}{5}} = \frac{2197}{8330} = 0.263\,75$

7. If a deck of cards contains the two jokers (one red, one black) that can be any desired

card, what is the probability of four of a kind?

$p = \frac{13\binom{6}{4}}{\binom{54}{5}} = \frac{1}{16\,218} = 6.166\,0 \times 10^{-5}$

9. If a deck of cards contains the two jokers that can be any desired card, which hand should

win: a five of a kind or a royal flush? Explain your reasoning.

Five of a Kind: $13\binom{6}{5} = 78$

Royal Flush: $4\binom{7}{5} = 84$

With fewer ways to make the hand, the five of a kind should win.

11. A player holds the five cards 5■, 5■, King■, King■ and Ace ■ in her hand. If she

discards the Ace ■ (without replacing it into the deck) and draws an additional card,

what is the probability that the result will be a full house?

$p = \frac{4}{47} = 8.510\,6 \times 10^{-2}$