

DTP-Math-Circle: Session 2—Probability

Sept 16 2022

7 Playing cards cleverly

There are two decks of cards, one deck is a normal deck of 52 cards and the other has 104 cards, with two copies of each card. You pick two cards from the same deck and if both of the cards are red, you win. Which pack will you choose to pick from?

Another card problem: In the game of poker, each player is given 5 cards from a regular pack of 52 cards. The less probable hand wins. Two possible special hands are (A) "four of a kind", i.e. four 5's or four 7's or 4 Queens, etc., the fifth card can be anything. (B) "Full House", which is 3 of a kind and 2 of another kind. Which hand would win ? What about (C) "Flush", i.e. five cards of the same suit ?

What is the probability of getting "Queen of hearts + King of hearts + Ace of spades + 8 of diamonds + 3 of Clubs" ? Why is this not taken to be the winning hand in the game?