

Mathematical Puzzles, Games and Other
Diversions
Day 4

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Notes

Counting

- ▶ What is the probability that a card drawn from a shuffled deck of 52 cards is an ace?
- ▶ What is the probability that two cards drawn are both aces?
- ▶ And three cards, or four cards?
- ▶ How many different ways are there to order the four aces?
- ▶ How many different orders are there for a deck of cards?
- ▶ What is the probability that if you draw three cards from a deck, at least one of them is an ace?
- ▶ What is the probability that if you draw three cards from a deck, exactly two of them are aces?

Notes

A Poker Trick

From Wallace Lee's Math Miracles 1950 (William Fitch Cheney)

TELEPHONE STUD



A genuine mystery is created wherever "Telephone Stud" is presented, and "Fitch," the inventor, deserves much credit for creating a principle new in mathematical card magic.

Effect: A spectator is asked to bring his own shuffled deck, and deal five face down cards. The performer arranges these to resemble a hand at Stud Poker with four face up on top of the remaining face down or Hole card. The spectator is asked to telephone the performer's assistant and to tell him the names of the four face up cards. The performer's assistant then names correctly the remaining Hole card.

Notes

A Poker Trick (cont.)

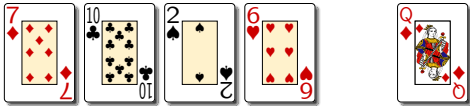
Hints

- ▶ Given any five-card hand, is there anything you can say about the suits of the cards?
- ▶ When given a five-card hand, you can't encode just ANY of the cards. You might have to be picky.
- ▶ Given any two cards of the same suit, what can you say about the difference in their values?

Notes

Examples

Which card is being encoded?



- ▶ The card on the left (7D) tells us that the encoded card is ALSO a diamond. So we just need to determine its value.
- ▶ We just label the other cards as low, middle or high, and encode a number as follows:
 $LMH = 1$, $LHM = 2$, $MLH = 3$, $MHL = 4$, $HLM = 5$, and $HML = 6$.
- ▶ In this case, we have HLM giving us a value of 5. We add 5 to 7 (the value of the left card), giving us 12. So QD is the hidden card.

Notes

Examples (cont.)

Given these five cards, which card should be encoded and how?



There's only one card that can be encoded: the Two of Clubs
 Here's the encoding:



Notes
