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Term Paper Proposal

For the term paper, I would like to discuss the application of combinations and permutations in gambling. More specifically the mathematics that go on in table games in a casino. The combinatorial mathematics behind card games is a key aspect of how house advantage exists. Players that understand combinations and permutations can gain a key advantage when playing these casino games. But even games that rely entirely on chance utilize these mathematic strategies, giving the casino an advantage in every game. The problem statements I wish to discuss in this paper are how casinos give themselves an advantage over the players in these games and also how the player can learn to use these math concepts to increase their odds of beating the house. One game that would be discussed in this paper could be 5 draw poker. I could discuss how the combinations can tell us how many possible combinations there are in a 5-card hand. Using the function to calculate combinations ($n!/r!(n-r!)$) this number computes to 2,598,960 combinations. While this is entertaining to compute there are more useful algorithms to find the probability of specific hands in a 5-card poker game. For example, finding the probability of a royal flush (the best hand in poker) results from realizing that there are only 4 outcomes possible due to the suits. Therefore you do $C(4,1)/2,598,960$ to compute the probability.

Possible Sources

[1]<https://wizardofodds.com/ask-the-wizard/blackjack/probability/>

This website provides several instances of casino bets that I could use as information.

[2] M. J. Burke, "NEVER ENOUGH," GPSolo, vol. 26, (7), pp. 17-19, 2009. Available:

<http://uri.idm.oclc.org/login?url=https://search-proquest-com.uri.idm.oclc.org/docview/218167822?accountid=28991>.

[3] T. Dokoupil, "Go Ahead, Make Their Day," Newsweek, 2008. Available:

<http://uri.idm.oclc.org/login?url=https://search-proquest-com.uri.idm.oclc.org/docview/214269693?accountid=28991>.