

ODDS

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The ratio of $\frac{P(A)}{P(\bar{A})}$ is referred to as the actual odds in favor of event A happening.

Pay off against A is the ratio of net profit to total money bet.

Ex. If you place a \$6 bet, then draw a card from a deck of playing cards, and the event is that the selected card is not a face card.

Then $P(\text{face card}) = \frac{3}{13}$ and $P(\text{not face card}) = \frac{10}{13}$, therefore the actual

odds against drawing a face card is $\frac{P(\text{not face card})}{P(\text{face card})} = \frac{\frac{10}{13}}{\frac{3}{13}} = \frac{10}{3}$. We can

also write this ratio as 10:3.

So for every \$3 bet, you will win \$10 if the selected card is a face card. So since you placed a \$6 bet, your net profit would be \$20.

Now suppose the casino changes the odds against a face card to 8:3, your net profit can be computed as follows:

$\frac{8}{3} = \frac{\text{Net Profit}}{\text{Total money bet}}$, $\frac{8}{3} = \frac{\text{Net Profit}}{6}$, so your net profit would be \$16.