Probability Trees

Example 1

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Probability Trees

- Two gamblers, A and B, are playing each other in a tournament to win a jackpot worth $\$6,000$.
- The first gambler to win 5 rounds, wins the tournament, and the jackpot outright.
- Each player has an equal chance of winning each round. Also, a tie is not possible.
- The tournament is suspended after the seventh round. At this point A has won 3 rounds, while B has won 4.
- They agree to finish then and divide up the jackpot, according to how likely an outright victory would have been for both.

How much money did A end up with?

Probability Trees

- Consider that A needed to win two more rounds, while B only need to win one more.
- One could suppose that B was twice as likely as A to win the jackpot.
- That would mean that the shares of the jackpot would be $\$2,000$ for A and $\$4,000$ for B.

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- WRONG!

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- At the end of the seventh round, A had a 25% chance of winning the jackpot.
- A's share of the jackpot is the $1,500$.
- B had a 75% chance of winning, so gets $4,500$.