

Expected Value

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If there is a 10% probability of rain, you are worried this will impact your event.

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profit	+5000	-10,000

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expected value is the weighted average of the probabilities and is often used in making predictions (and decisions)

$$= 5000(0.9) - 10000(0.1)$$

Expected Value Applications

mean of repeating the experiment a large number of times

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<https://www.weather.gov/rnk/winter>

cs.appstate.edu/~sjg/class/1010/1010syllabus.pdf

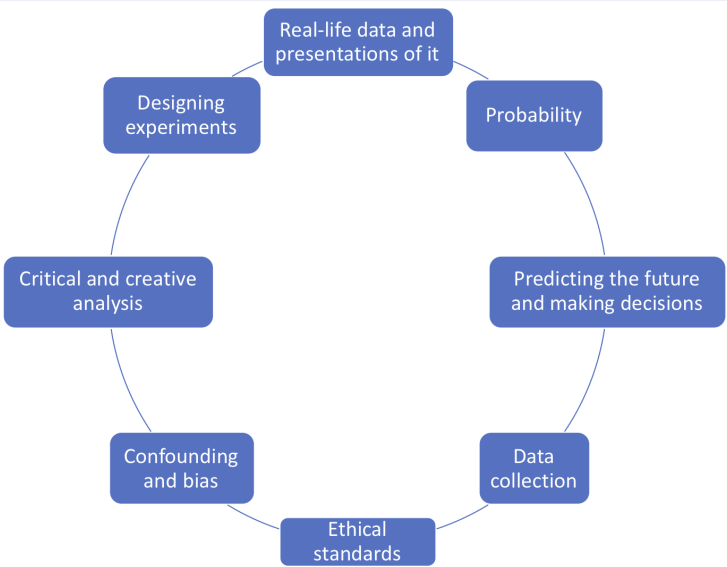
weather, grades, games, lottery, sports, business...

gives a sense of fairness (gambling) and risk and hence is used in decision-making



Picture credit: [https://www.pinnacle.com/en/betting-articles/Betting-Strategy/](https://www.pinnacle.com/en/betting-articles/Betting-Strategy/how-to-calculate-expected-value/EES2VE46TM4HTT32)

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**Problem solving at the heart of mathematics:
visualization, generalization, making decisions**