



Some Basic Concepts in Probability



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What is Probability ?

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What is Probability ?

- Chance of rain today

Some Basic Concepts in Probability

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- Chance of rain today
- Likelihood of my favorite team winning



Long Run Frequencies notion of Probability

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- The probability 0.5 of getting **Heads** on a coin toss can be thought of as the long run frequency of multiple coin tosses

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- The probability 0.5 of getting Heads on a coin toss can be thought of as the long run frequency of multiple coin tosses
- The probability $\frac{1}{6}$ of getting the **number 6** on rolling a fair dice can be considered as a long run frequency of multiple dice rolls

Probability, *a formal definition...*

Probability is a numerical measure of the frequency of occurrence of an event. It is measured on a scale from 0 to 1. An event of probability 0 will definitely not occur. An event with probability 1 will occur with certainty



Random Experiment and a Random Variable

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Random Experiment

It is simply any situation wherein a process leads to more than one possible outcome

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- A Coin toss

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- ❑ A Coin toss
- ❑ Roll of a dice
- ❑ A company declaring its Earnings
- ❑ Closing value of the stock market tomorrow

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- A Coin toss
- Roll of a dice
- A company declaring its Earnings
- Closing value of the stock market tomorrow
- Bonus that you get at year end

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*Viewing business processes as **Random Experiment** with an associated **Random Variable** is helpful in characterizing them and making predictions about the outcome*