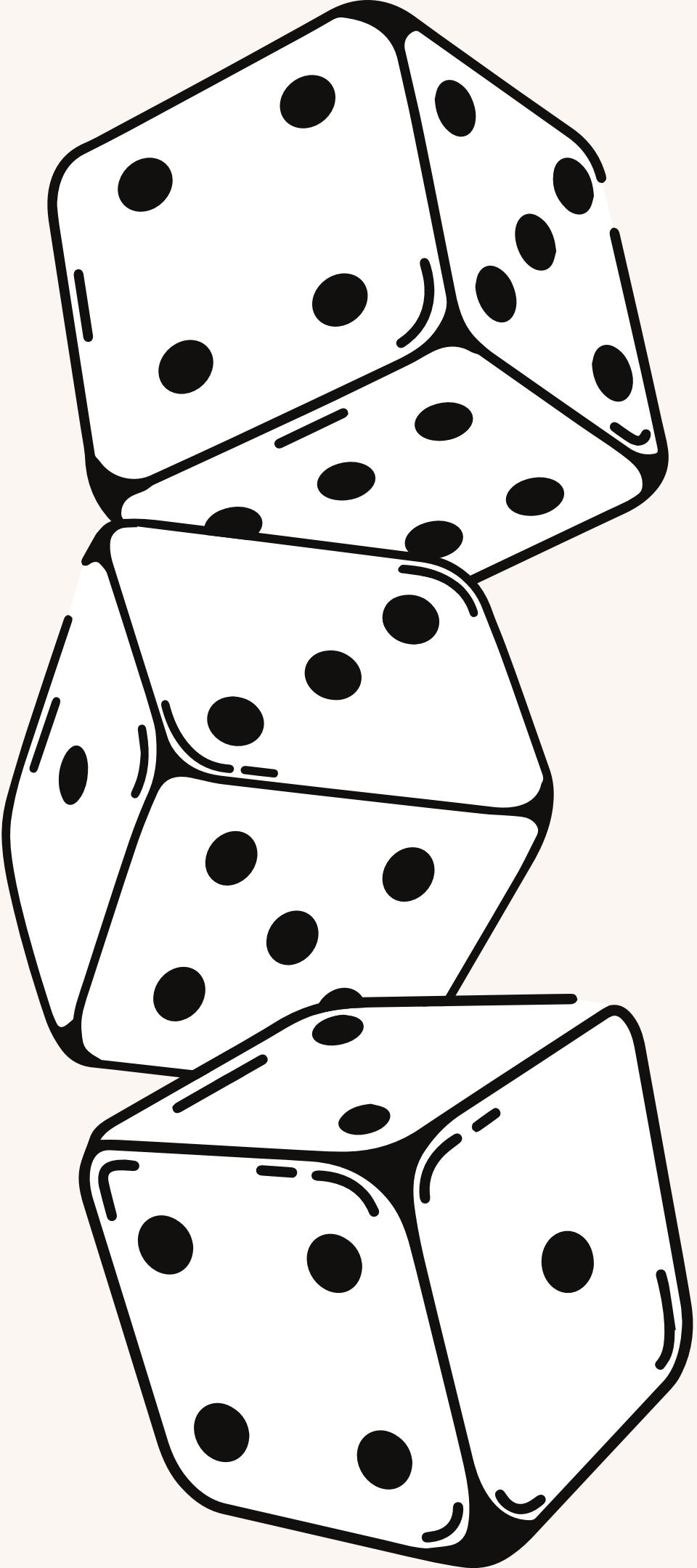
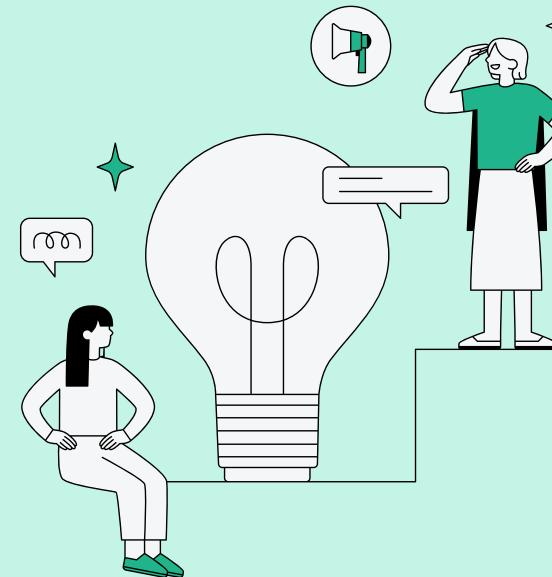


Probability course summarization part 2

Presented by Rawan Hatem



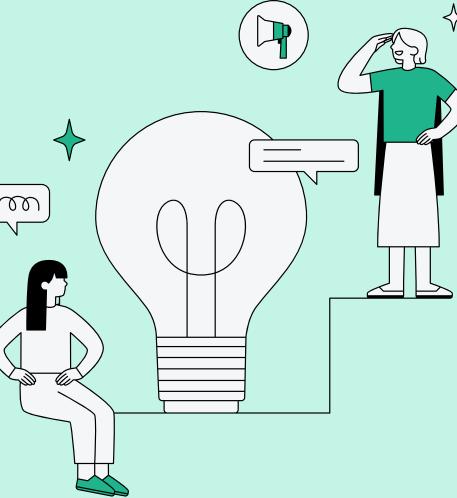
Random Variables



- A random variable is a way to map outcomes of random processes to numbers.
- It quantifies the outcomes of a random process, such as flipping a coin, rolling dice, or measuring rainfall.
- Random variables are typically denoted by capital letters (e.g., X, Y).
- An example of a random variable (X) is defining it as 1 if a fair coin lands on heads, and 0 if it lands on tails.
- Another example (Y) is defining it as the sum of the upward faces after rolling 7 dice.
- The usefulness of defining random variables is that it allows for more math operations and cleaner notation when dealing with probabilities.
- Random variables differ from traditional variables in algebra, as they can take on many different values with various probabilities, rather than being assigned or solved for specific values.
- Probabilities can be discussed in terms of a random variable equaling, being less than or greater than, or having certain properties.

Types of Random Variables

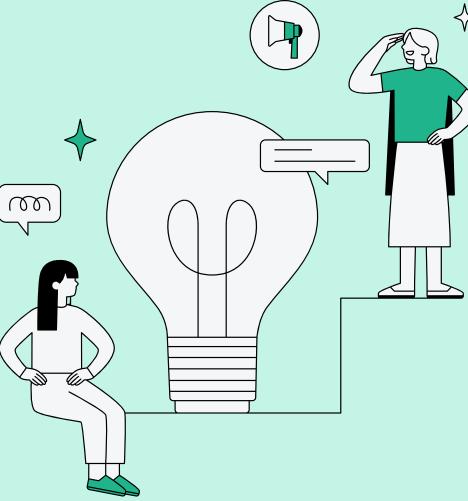
Discrete - continuous



- Random variables can be categorized into two types: discrete and continuous.
 - Discrete random variables can take on distinct or separate values. You can count the number of different values it can take on.
 - Examples of discrete random variables:
 - A random variable that is equal to 1 if a fair coin is heads and 0 if it's tails.
 - The year a random student in the class was born.
 - The number of ants born tomorrow in the universe.
 - Continuous random variables can take on any value in a range or interval, which could even be infinite.
 - Examples of continuous random variables:
 - The mass of a random animal selected at a zoo.
 - The exact winning time for the men's 100-meter dash at the 2016 Olympics (not rounded).

Types of Random Variables

Discrete - continuous .cont



- For a discrete random variable ,you can list and count the values it can take on.
 - For a continuous random variable, you cannot list or count the values it can take on.
 - A discrete random variable usually has a finite number of values, but it can have an infinite potential number of values as long as they are countable.
 - When defining a random variable, it is essential to specify whether it is discrete or continuous, as it affects the analysis and interpretation of the data.
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