

Simulations

Day 4

What is a Simulation?

Simulation:

- A way to model random events so that simulated outcomes closely match real world outcomes.
- Simulations require less time, effort, and money; yet simulations may approximate real-world results!

Let's try a Simulation ourselves!

Jaylan and Jon are playing a dice game. Jaylan believes that he can roll six dice and get each number, one through six, on a single roll. Jon knows the probability of this occurrence is low. Jon bets Jaylan that he will win Jaylan's car if he can get the outcomes he wants in twenty tries.

Can Jaylan get one of each number in a role of six dice?

We can use our calculator to help us!!

Math \Rightarrow PRB \Rightarrow `randInt(1, 6, 6)`

Why these numbers??

We want the numbers 1-6 and we are rolling six dice!

We want twenty trials! Let's make a chart to help us keep track!

What were our findings?

How many of you got all 6 numbers? How many times each??

What predictions can be made based on these results?

Law of Large Numbers

The more trials you run, the closer you will get to the theoretical probability.

Quick Probability Review!

Roll	Simulation Outcome
1	1, 3
2	6, 2
3	5, 6
4	2, 3
5	1, 6

Determine the following probabilities as a percentage:

1. Rolling a Sum greater than 5?
2. Rolling at least one 4?
3. Rolling two numbers less than 4?