Review: 1. Buffon ‘s Needle

Reporter: Georgia - Komarovi
Opponent: Bulgaria - Sophia
Reviewer: Team Switzerland
Problem

Draw a series of parallel equally spaced lines on a horizontal surface. Pick a bunch of sticks (e.g. matches or needles) slightly shorter or longer than the separation between the lines, and randomly drop them on the surface. It is claimed that the number of times the sticks cross the lines allows estimating the constant π to a high precision. What accuracy can you achieve?

Task partially fulfilled
Outline of Report

- Phenomenon
- Proofs
- Theoretical Model
- Primary Experiments
- Analysis
- Simulation
- Different heights
- Bent needle
- Conclusion

- Good
- Ok
- Needs Improvement
Strengths and Weaknesses Reporter

**Strengths**
- Used bent needles
- Simulation
- Compared multiple drops to single drops

**Weaknesses**
- Best ratio 1 to 1
- Low amount of drops
- Got exactly pi
- No explanation of simulation
- Proofs not explained well
- No definition of randomness
- No mention of the law of large numbers
- No proof of randomness
Strengths and Weaknesses Opponent

**Strengths**
- Critizised the lack of randomness
- Optimal ratio
- Critisized low number of throws

**Weaknesses**
- Ideal probability is 1/2
- Missed the large error
- Idea to test randomness
- Didn’t point out that she claimed to get exactly pi
Discussion Topics

• Determining Randomness
• Drop mechanism
• Height of drop
• Difference between needles and matches
• Width of needles
• Amount of drops
Thank you for listening