1. Buffon's Needle opposition

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The 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?

Addressing the problem

Test method	✔ 🟡 —
Theory behind finding Pi	✔ 🟡 —
Pi Accuracy	✔ 🟡 —
Using theory to explain different lengths	✔ 🟡 —

Strengths

Theory	Practical
• Find an accurate approximation of Pi • Has a correct equations for finding Pi	• Gave all potential angles that the needle could land a relatively equal chance

Weaknesses

Theory

- Equation: is different if needle is slightly longer or shorter.
- Didn't answer problem – no slightly longer or shorter.

Practical

- Changed separation between lines in each test
- Did not say they controlled any variables

Points for discussion

- What would happen if you hadn't kept the line spacings the same?

- What affect could variables have e.g drop height and angle