Name(s)

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Project Number

J1299

Project Title

Arches and Loops and Whorls, Oh My! A Study of Fingerprint Patterns

Abstract

Objectives/Goals

The objective of my project was to investigate which basic fingerprint pattern, Loop, Arch, or Whorl, had the probability to be the most common. I believe the basic Loop pattern will be the most common by about 50%. Second, the Arch will fall about 30% and then the Whorl pattern will show about 20% probability. This experiment involved taking large numbers of fingerprints from several classes.

Methods/Materials

I took a student's right wrist with my left hand, his/her right index finger with my right hand, and gently but firmly pressed the finger onto the inkpad. Using the same pressure, I then pressed the student's finger onto the fingerprint card, making sure the fingerprint was clear and free of smudges. I repeated the experiment with the remaining students in the class, then with with the remaining classes from 3rd to 5th grade. I counted and categorized all the fingerprints collected.

Results

After applying the experimental probability, the results partially confirmed my objective: the basic Loop patterns have a 49% probability (I predicted 50%). However, the basic Whorl patterns calculated to have 32% probability (I predicted 20%), and the basic Arch patterns have 19%(I predicted 30%). I also observed that taking fingerprints took practice. Some prints were difficult to "read", while others were clear and obvious.

Conclusions/Discussion

Based on the 200 million fingerprint files the FBI has, using a proportionate equation, I calculated about how many people have certain types of prints. However, I will have to perform the experiment on a much larger scale to get a truer picture, because according to the Ventura County Crimb Lab, from their experiences, Loop patterns show up about 60%,(11% difference), the Whorls is about 35% (3% difference), and the Arch at about 5%(a 14% difference)! Findings like these may be essential to anyone working in this field by giving them statistics to work with for any given population, and for any given criminal population.

Summary Statement

My project is about testing probability of which basic fingerprint patterns are common.

Help Received

Mom helped type report.   Mesa Union School students for their active participation.