CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
Lynne R. Qiu

Project Number
J0119

Project Title
Forensic Crime Unit: Blood Spatter

Abstract

Objectives/Goals
In forensic science, blood spatter is often used to interpret what has happened at the crime scene. This experiment focuses on whether the materials used or the heights from which the blood is dropped affects the diameter of the resulting spatter more.

Methods/Materials
A simple, adjustable fixture was used to hold an eyedropper filled with cosmetic stage blood. The eyedropper was gently squeezed so the stage blood falls freely, without any force except gravity acting on it, to three different testing materials, ceramic, vinyl, and carpet. The test was repeated for six different heights. For each height, four samples were taken and averaged to reduce human error. The diameter of each sample was measured and recorded. The data was then processed and analyzed.

Results
The blood spatter on ceramic was consistently larger than the other two, due to hardness and smoothness. Vinyl#s spatter tended to shrink, because vinyl has a positive charge, and there is an ingredient in the cosmetic blood which reproduces this, and the two repel. Carpet#s results were the easiest to predict, as it has many tightly-bunched fibers that absorb liquids almost instantaneously.

Conclusions/Discussion
My hypothesis stated that the materials would affect the diameter of the blood spatter more than the height. This hypothesis was correct. Interestingly, the diameters of the spatter, when graphed, did not increase linearly. This is because the force of acceleration due to gravity on the blood is being balanced by the force of air friction. When the graph of Diameter vs. Materials is placed next to the graph of Diameter vs. Heights, the Diameter vs. Materials graph has a larger spread of data, leading me to the conclusion that the materials used affect the resulting spatter#s size more than the heights do.

Summary Statement
If the materials or the heights from which the blood is dropped affect the diameter of blood spatter more.

Help Received
Mother helped set up display board, Father helped with experiment fixture.