

Using Mathematical Tools In Forensic Investigations

Carl Leinbach and Patricia Leinbach

Department of Computer Science
Gettysburg College
USA
and
Office of the Coroner, Retired
Adams County, Pennsylvania
USA

leinbach@gettysburg.edu
and
accoroner@embarqmail.com

Workshop Proposal for the TI-Nspire & Derive Strand

ABSTRACT

During this hands on workshop participants will choose one of four hypothetical crime scenes and work as teams to construct a classroom learning environment for students to gather evidence and analyse it using mathematical techniques and technical tools that are available to them in their classroom. Each team will discuss their pedagogical objectives and strategies for presenting the scenarios and how to guide their students while performing their mathematical investigations. After discussing their plans with the presenters, the teams will conduct their crime scene investigation. If time permits, the teams will review the scenarios and strategies of other teams.

Topics from forensics that will be part of individual scenarios will include: blood spatter analysis, estimating time since death, estimating vehicle speed from the length of tire skid marks, fingerprint analysis, force of impact, locating exact positions, relating a person's height to their stride length, and other topics. The technological tools required to solve the mathematical portions of the analysis will be solved using DERIVE[®] or TI-Nspire.

Keywords

Forensics, pedagogy, applications, student motivation

Observations

The presenters will supply access to materials that describe the mathematical pedagogy necessary to analyze the forensic situation and bring tools such as thermometers, materials to simulate blood spatters, GPS's, measuring tapes, etc. A room large enough for teams to lay out their "crime scene" is required for this workshop. It is also important that the room also contain computers with DERIVE or that the participants have access to TI-Nspire handhelds.