The Space Detective Agency: A Summer Program of Mathematics and Science

In August 1995, children aged 10-14 participated in a week-long mathematics and science program sponsored by the Centre for Mathematics, Science and Technology Education (CMASTE) at the University of Alberta. A space detective agency theme provided a focus for an interesting assortment of hands-on investigations. Students spent the week as detectives, collecting and analyzing clues in the form of science and mathematics problems to solve intergalactic mysteries. Activities included finding information through the Internet on the environmental features of cold planets and the physical features of animals living in the Arctic; experiments with liquid nitrogen and dry ice; decoding messages sent from outer space; fingerprint and locomotion analyses; building rockets and CO_2 cars; plus many more challenging and interesting activities in which observation, classification, extrapolation, deduction and a healthy imagination were required.

The culminating event of the week had students analyzing an alien space probe that included objects and information about the aliens' location in space, their physical being, and atmospheric and environmental aspects of their planet. Each group then presented a live news broadcast of its findings to a receptive audience of parents, peers and faculty members.

The program was organized and conducted by mathematics and science education doctoral students, in conjunction with faculty members from the Department of Secondary Education at the University of Alberta. A research component of the project focused on students' understanding of mathematics and science in high activity, interactive and variable-entry investigations.

The Space Detective Agency pilot summer program proved enjoyable for everyone involved. Its success has inspired talk of running the program again next summer. For more information, contact Elaine Simmt, Lynn Gordon Calvert or Leo MacDonald in the Department of Secondary Education, University of Alberta, at 492-3674.

A Challenge

Evaluate the following problems and send your solutions to C. Georges Mullings, 2-4518 54 Avenue, Barrhead T7N 1K7.

1. How do you use a grid or graph to teach division in algebra?

2. What is the algorithm to find the cube root of any number?

3. How do you evaluate the following equation?

$$\int_0^{\pi/2} \sqrt{\sin\theta}\ d\theta =$$