Computers as enrichment. If accessible to the school, these provide an opportunity for students to learn how to write programs. If they are not accessible, then computers could be considered from a social science point of view, or the kinds of problems they cannot solve.

Games. It is the mathematical analysis of the game that is more important than the actual game - for instance, "Instant Insanity".

Number Theory. Casting out nines - *why* does it work? What would happen in other bases, such as, for example, base eight?

Topology. It is loaded with enrichment materials - the four-color problem, the Königsberg bridge problem, and other network problems.

Curve stitching. It is not just the pleasing designs that can be constructed, but rather what kinds of curves, for example, can be generated from straight lines, and why. This is the mathematics.

Probability. Testing reliability of samples is an important consideration for ordinary-life decision making (example: cigarette ads).

Music. Take the themes in any musical score and do geometrical transformations on them.

A View From the Bridge

Charles E. Allen
Garfield High School
Los Angeles

Reported by *Bob Hood*, Calgary

From the bridge, teachers could see students in the river of mathematics - some were having a hard time to stay afloat, some were treading water, some were swimming with the current, and some were making good progress swimming against the current. The teacher could stay on the bridge and shout orders to the swimmers, he could go down on the bank and get closer to the swimmers, or he could get right into the activities of the swimmers, trying to assist each according to his needs.

Chuck suggested that each one of his audience take a sheet of paper and fold it so that there were two equal parts (top to bottom or side to side), then fold it again so that each person had four equal parts. After each fold the number of equal parts was noted. Those who thought they could fold the paper seven times found that they had an impossible job. A record of the results was made as follows:

Powers of 2	Number of Folds	Number of Equal Parts
2^0	0	1
2^1	1	2
2^2	2	4
2^3	3	8

(and so on)

Then Chuck gave his audience the "13 Cookies Problem" - 13 cookies to be arranged in 6 equal rows, no doubling up, no cookies to be broken. Hint: there is something in most kitchens to which mother and the rest of the family make frequent reference. When you discover this, you will know what to do to arrange the 13 cookies.

Names for 2: Chuck gave us one simple name for 2 and asked his audience to suggest all the other names they could think of.

$2 = 1 + 1$ $\quad 2 = 1/2 + 1\ 1/2$ $\quad 2 = 3\ 3/4 - 1\ 3/4$

$2 = \sqrt{4}$ $\quad 2 = 2^0 + 2^0$ $\quad 2 = \sqrt[3]{8}$ (and so on)

He closed his first talk with the suggestion, "Why not start with the complex and move step by step to the simple. By doing this, you pick up students as you move along instead of dropping them off as you move from simple to complex."

INVOLVEMENT - The Only Way to Fly

Charles E. Allen

Reported by *Bob Hood*, Calgary

This session was divided into three parts. The first 20 minutes were used to prepare the audience for a 30-minute demonstration class, which was to be followed by a 30-minute session entitled "Allen Raps with Audience".

Chuck told the audience that a group of Grades VII, VIII and IX students were going to be brought into the lecture hall and he would put on a demonstration lesson. He told the audience that at certain times he would want the lights out and asked someone who was near the lights to turn out the lights as quickly as possible when he called "lights". With a little practice he got the speed of response which he wanted.

When the students were ushered in, Chuck introduced his demonstration by reference to "Mod Squad" which he did not mention by name, but by hints and suggestions he got the students to name "Mod Squad". They agreed that to be members of "Mod Squad", you had to be alert and think fast.