Tool &Games...*continued from page 3*

- COMPLEX (a number-plane model of the four operations on complex numbers)
- FUNCTIONS (a function-machine game with linear and quadradic functions)
- TARGETS (to learn about Cartesian coordinates)
- POLAR (to learn aboout polar coordinates, degrees and radians.)
- SYMMETRY (to create turtle graphics with mirror and rotational symmetry)

Tools:
- GRAPHER (to graph algebraic and trigonometric functions)
- GEOMETER (to construct and measure figures; to generate conjectures)
- LOCATER (to investigate locus and extremum problems)
- TRIGGER (to draw and measure triangles for trigonometry)
- NUMBER (prime factorization, fractions, simple radical form, etc.)
- PROBER (a probability calculator)
- ASKER (to investigate binomial distributions)
- SCATTER (a statistics calculator and grapher)

The folks at Terrapin assure me the package will be available in April at the Orlando NCTM meeting. I would love to get feedback from CLIME members.
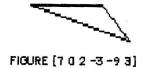
Enrollments to the Logo Exchange are down!

It is critical that we support those organizations that help us use Logo more effectively. If you haven't done so, join the ICCE special interest group for Logo-Using Educators (ICCE stands for the International Council for Computers in Education which publishes the Computing Teacher) and receive your copies of the only journal (with the exception of this one, of course) devoted to Logo - the *Logo Exchange*. For subscription information call or write to: The Logo Exchange, University of Oregon, 1787 Agate Street, Eugene, OR 97403. Δ

Geometry...*continued from page 11*

where :L is a list of numbers and the number of items in :L is even.

For example, we could draw Piece #1 with FIGURE [7 0 2 -3 -9 3]. Notice that we no longer need to enclose negative numbers in parenthesis.

FIGURE [7 0 2 -3 -9 3]

Useful Procedures to explore with:

SCALE h*orizontal vertical*
MOVE *horizontal vertical*
PUT *horizontal vertical*
FIGURE *list*
FLIP.V *list*
FLIP.H *list*
FLIP.HV *list*
CLOSED? *list*
GEOPIECES

Some questions to ponder:

Is it possible that figures drawn with different sequences of numbers will be congruent?

Is it possible to look at a sequence and tell whether or not the resulting figure is closed?

Some sequences yield simple paths (i.e. paths which do not cross themselves), some do not. Is it possible to look at a sequence and tell whether or not the result is a simple path?

If you generated a random list, how often would it be closed, simple, or other? Δ

Fractions...*continued from page 17*

table to the screen.

2. Pattern block shapes are drawn in the colors that most closely approximate the colors of the plastic or wooden pattern blocks themselves. If you translate this program to another version of Logo, be sure to change the colors to better shades.

3. Addition and subtraction problems can also be generated with the program, if desired. Just EDIT [M.PROBLEM D.PROBLEM] to see their structures, and construct A.PROBLEM and S.PROBLEM procedures.

4. Remember that this is an open-ended microworld; that means that there is no sequential or "correct" way to use it with your students. Children will probably need to begin just by putting the basic shapes on the screen, and constructing their corresponding patterns with the blocks on the table to understand the inherent relationships. Don't rush them into solving the multiplication and division problems.