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Cognitive Science Studies of Mathematical Thought

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COGNITIVE SCIENCE studies of mathematical thought:

a. The most complete report of all of our work is contained in:

Davis, Robert B., Learning Mathematics: the Cognitive Science Approach to Mathematics Education. [1984] Available in the U.S.A. from Ablex Publishing Corporation, 355 Chestnut Street, Norwood, New Jersey 07648; available in Europe from: Croom Helm Ltd., Provident House, Burrell Row, Beckenham, Kent BR3 1AT, England; in Australia, Croom Helm Australia Pty Ltd., First Floor, 139 King Street, Sydney, NSW 2001, Australia.

b. Davis, Robert B., Stephen Young, and Patrick McLoughlin, The Roles of "Understanding" in the Learning of Mathematics. Final Report NSF SED 79-12740. April 1982. Available from the Curriculum Laboratory, University of Illinois, 1210 West Springfield, Urbana, IL 61801.

c. Davis, Robert B., and Curtis McKnight, "The Influence of Semantic Content on Algorithmic Behavior." Journal of Mathematical Behavior, vol. 3, no. 1, Fall 1980, pp. 39-89.

d. Davis, Robert B. "The Postulation of Certain Specific, Explicit, Commonly-Shared Frames." Journal of Mathematical Behavior, vol. 3, no. 1, Fall 1980, pp. 167-201.

e. Davis, Robert B. "Frame-Based Knowledge of Mathematics: Infinite Series," Journal of Mathematical Behavior, vol. 3, no. 2, Summer, 1982, pp. 99-120.

f. Young, Stephen C., "The Mental Representation of Geometrical Knowledge." Journal of Mathematical Behavior, vol. 3, no. 2, Summer, 1982, pp. 123-144.

g. Erlwanger, S. H., "Benny's Conception of Rules and Answers and IPI Mathematics," Journal of Children's Mathematical Behavior, vol. 1, no. 2, Autumn 1973, pp. 7-26.

h. Davis, Robert B., "Complex Mathematical Cognition," a chapter in Herbert Ginsburg, ed., The Development of Mathematical Thinking. Academic Press, 1983.

i. In general, most of our cognitive science studies are published in the Journal of Mathematical Behavior, available from: Ablex Publishing Corporation, 355 Chestnut Street, Norwood, New Jersey 07648.

III. Educational Use of Computers

a. Davis, Robert B., "What Classroom Role Should the PLATO Computer System Play?" Proceedings of the 1974 National Computer Conference (AFIPS Press, 210 Summit Avenue, Monroale, NJ), May 1974, pp. 169-173.

IV. School Mathematics Curriculum

a. Davis, Robert B., "The Strange Case of the New Mathematics." Childhood Education, vol. 50, no. 4 (Feb. 1974), pp. 210-213.