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Edmund A. Lamagna* (eal@cs.uri.edu), University of Rhode Island, Kingston, RI 02881.

Frogs + Puzzles = Algorithmic Thinking.

Recreational mathematics provides a rich source of interesting, entertaining problems that can be used in the classroom to develop mathematical thinking and problem-solving skills. Several versions of peg solitaire in which frogs perform various feats, such as exchanging positions, are considered. While some of the puzzles are well known, the mathematics underlying their solutions is not. The problems offer a vehicle for learning about algorithms in an “unplugged” way, without computer programming. The puzzles considered involve significant mathematical content and provide a springboard into such topics as the analysis of algorithms, lower bounds and optimality, parity, and the generalization of solutions. The puzzles also promote the use of important problem-solving paradigms such starting with small cases and observing patterns to develop intuition about a problem. (Received September 14, 2020)