

### Martin Gardner from *Alice in Wonderland* to POW

Martin Gardner was born in Tulsa, Oklahoma, on October 21, 1914. For three decades, beginning in 1956, he wrote the Mathematical Games column in the monthly magazine *Scientific American*. He also had a never ending fascination with micromagic, scientific skepticism, philosophy, religion, and literature. He has published over 70 books, included *The Annotated Alice*, a very thorough analysis and resource for research on the famous book *Alice in Wonderland*. His writings have had an enormous influence, and many young people have become interested in math because of his columns and books. He has a knack for making math ideas understandable, exciting, and fun! Many of the topics we've worked on in Problem of the Week at our school were popularized by Martin Gardner: Penrose Tiles, Pentominoes, Color Squares, Fault-Free Rectangles, etc.

Is a game he created; perhaps you'll see the connection between the type of math he explored and the type of logical thinking explored in Alice's adventures in both *Wonderland* and *Through the Looking Glass*.

### Hip!

Usually Martin Gardner reported on other people's discoveries and inventions, but this is a game he made up himself. Two players take turns placing counters (one color for each player) on the squares of a 6 X 6 checkerboard. The first player whose counters form a square loses. The squares can be of any size, and rotated at different angles. GO SLOWLY! Tilted angles can be easy to miss until you get familiar with the game.

- 1) Play Hip! Can you develop a strategy to help you win? Do you think the first or second player has an advantage?
- 2) How many squares of all sizes and orientations are possible on a six by six board? Can you find a formula that will give that answer for different size boards?
- 3) Is a tie possible? If so, show a completed game with no squares.
- 4) By the way, if you're searching for that tie, how many different completed games can there be?
- 5) Invent a variation.
- 6) (For algebra students.) What do you notice about the slopes of the sides of the squares when the lines are neither vertical or horizontal?
- 7) Have fun!