

# MATHEMATICS & ART

MATHEMATICS AWARENESS MONTH APRIL, 2003



Design by Douglas Dunham

The connection between mathematics and art goes back thousands of years. The ancient Greeks and Romans used mathematics in sculptures and to design aesthetically pleasing buildings. In the 15th century Leonardo da Vinci wrote "Let no one read me who is not a mathematician." In the 16th century Dürer employed mathematics to introduce perspective in drawings. In the 18th and 19th centuries mathematics was extensively used in the design of Gothic cathedrals, Rose windows, mosaics and tilings. In the 20th century geometric forms were fundamental to the cubists and many abstract expressionists. In recent decades several award winning sculptors have used topology as a basis for their pieces. The close connection between mathematics and art is most readily seen in the works of the Dutch artist M. C. Escher. Among the mathematical concepts represented in his work are: infinity, Möbius bands, tessellations, deformations, reflections, Platonic solids, spirals, and the hyperbolic plane. The pattern above was inspired by one of Escher's hyperbolic prints.

For essays, links, books and speakers about mathematics and art visit <http://mathforum.org/mam/03>

Sponsored by the Joint Policy Board for Mathematics  
Mathematical Association of America ([www.maa.org](http://www.maa.org))

American Mathematical Society ([www.ams.org](http://www.ams.org))

Society for Industrial and Applied Mathematics ([www.siam.org](http://www.siam.org))

Financial support provided by the National Security Agency

Concept and Design: Joseph A. Gallian and Douglas Dunham, University of Minnesota Duluth

Acknowledgements: Abhijit J. Parsekar and Visualization and Digital Imaging Lab, University of Minnesota Duluth