

Art Meets Math: Ancient Meeting of Worlds

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We talk about “real world math” and practical applications of mathematics concepts with students as we try to instill a sense of meaning. Take students on a break from the rule-defined, structured realm of modern mathematics lessons and visit some creative examples where mathematics formed the very basis for various examples of ancient art. Both famous and not-so-famous instances of art from such ancient Greek, Hindu, Islamic, Egyptian, and Native American cultures will amaze students with not only the intricacy, but with the knowledge that the very establishment of the art is based upon mathematical principles.

There is a direct correlation between art and mathematics; this relationship reaches back as far as the Stone Age (just look at [Stonehenge and the 56 Aubrey Holes](#)). This prehistoric architectural sculpture infused numerous math concepts into the design. The Aubrey Holes represent the phases of the lunar calendar as the people of that time interpreted it. (Invite students to scan this article for any math terms that they find; look closely at the photos and animation.) The fact is that art (and architecture) and mathematics were not really considered separate fields in many societies throughout recorded and even prerecorded history.

Students will identify a variety of mathematical concepts and principles that underlie the foundation of ancient art from a wide selection of civilizations and cultures.

NA-VA.9-12.4

Understanding the Visual Arts in Relation to History and Cultures

NA-VA.9-12.6

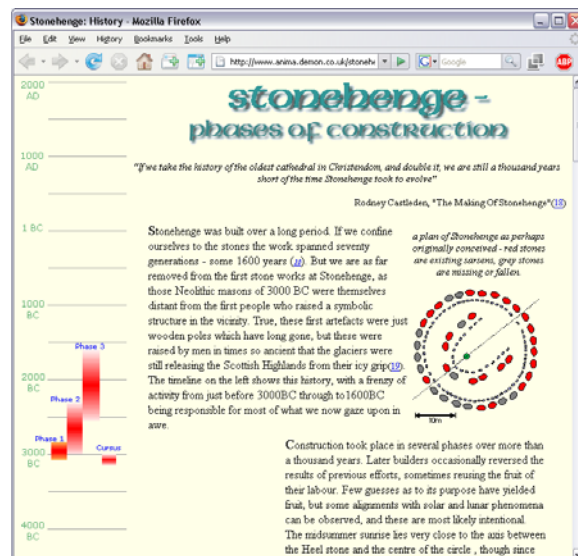
Making Connections Between Visual Arts and Other Disciplines

TEKS

§111.36. Mathematical Models with Applications

(9) The student uses algebraic and geometric models to represent patterns and structures.

(A) use geometric transformations, symmetry, and perspective drawings to describe mathematical patterns and structure in art and architecture;

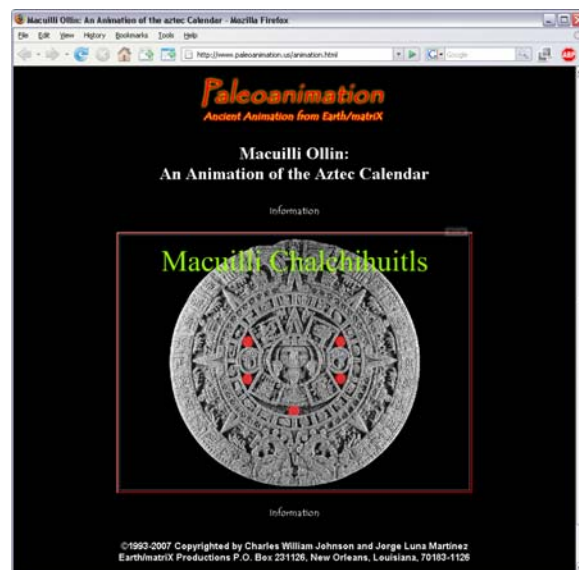


Meso and North American Art

Intrigue students by starting with [Earth/Matrix](#). This particular project seeks evidence of mathematics and geometric principles that underlie various samples of ancient artwork. This organization consists of a variety of scholars whose primary intent is to understand and explain various famous ancient specimens of artwork and architecture from a mathematical perspective. Specifically, send students to [Paleoanimation](#), which explores ancient cultural art samples using animation. Scroll down and begin with [Pakal, The Ancient Astronaut](#). Watch this video and read the information for an introduction to the inherent embedding of mathematical concepts and principles directly into the design. This ancient sculpture is actually the plans for a spacecraft constructed by the Mayans. As students watch the animation of the image (just look at the pivotal joints and rotational movements of the various components and it starts to come together), a newfound sense of awe and respect for this society is born.

Continue with the pointer in [An Animation of the Aztec Calendar](#). Evidence of space, position, symmetry, coordinates and axis, and symbols are just a few of the important components of this famous and ancient sculpture. After students finish the animation, continue with Earth/Matrix's exploration, [The Aztec Calendar: Math and Design](#).

Invite students to look for further evidence of mathematical concepts in other Native Indian artwork—including sculptures, pottery, and textiles—from the [Aztecs](#), [Incas](#), [Mayans](#), and various [North American](#) societies. Students should click each thumbnail and then click the actual image for an enlarged view of the art. Additional features in the online exhibition are available from the Art Institute of Chicago's collection of [Indian Art of the Americas](#).



Greek Art

The ancient Meso and North American Indians were not the only civilizations to advance artwork through application of mathematics. The ancient Greeks based much of their statues of human figures and their magnificent buildings upon the [Golden Ratio](#) and rectangle. This important proportion was easily