

## Mathematical Models with Applications Curriculum Bundle #7

Title	Suggested Dates
Geometric Transformations and Symmetry	January 5 – January 29 (18 days)

Big Idea/Enduring Understanding	Guiding Questions
Geometric transformations, including reflections, rotations, and dilations, are seen in the real world both in nature and features on man-made objects.	<ol style="list-style-type: none"> <li>1. Where are some examples of the use of tessellations in the real world?</li> <li>2. How can tell which transformations have been performed by examining an object and its image?</li> <li>3. How has the golden ratio been found and utilized in nature and architecture?</li> </ol>

The resources included here provide teaching examples and/or meaningful learning experiences to address the District Curriculum. In order to address the TEKS to the proper depth and complexity, teachers are encouraged to use resources to the degree that they are congruent with the TEKS and research-based best practices. Teaching using only the suggested resources does not guarantee student mastery of all standards. Teachers must use professional judgment to select among these and/or other resources to teach the district curriculum.

Knowledge & Skills with Student Expectations	District Specificity/Examples	Suggested Resources (See note above)
<p><b>M.9 The student uses algebraic and geometric models to represent patterns and structures.</b></p> <p>M.9A use geometric transformations, symmetry, and perspective drawings to describe mathematical patterns and structure in art and architecture;</p>	<ul style="list-style-type: none"> <li>• Translations, reflections (horizontal, vertical, and over <math>y = x</math>), rotations, and dilations (patty paper is a good tool), both lines of symmetry and rotational symmetry</li> <li>• Perspective drawing – two point and front/side/back views</li> <li>• Isometric drawings</li> </ul>	<p><b><u>A&amp;M Curriculum</u></b> Spring section 5.1-5.2 (Isometric)</p> <p><b><u>A&amp;M Curriculum Geometry</u></b> Fall section 10.1 -10.2</p> <p>Region IV/Comap <b><u>Modeling with Mathematics – A Bridge to Algebra II</u></b> Sections 4.3 – 4.6, 4.8 – 4.9 p. 202-217A, p. 225-238</p> <p><b><u>Dana Center Website</u></b> Instructional Materials Math Models Fine Arts: 2 point perspective drawing Fine Arts: Music (translations, proportions)</p> <p>Pearson <b><u>Mathematical Models with Applications</u></b> Section 6.5 p.705 – 716 (translations)</p>