Anoka-Hennepin Secondary Curriculum Unit Plan

Department:	Science and Technology Education	Course:	PLTW Gateway to Technology (DSF)	Unit 4 Title:	Design and Modeling Sketching and Dimensioning	Grade Level(s):	7-8
Assessed Trimester:	Trimester 1	Pacing:	6 Days	Date Created:	6/17/2014	Last Revision Date:	

Course Understandings: *Students will understand that:*
- Students will understand that three-dimensional computer modeling uses descriptive geometry, geometric relationships and dimensioning to communicate an idea or solution to a technological problem

DESIRED RESULTS (Stage 1) - WHAT WE WANT STUDENT TO KNOW AND BE ABLE TO DO?

Established Goals

Grade 7
<u>Geometry</u>
- **Draw, construct, and describe geometrical figures and describe the relationships between them.**
  1. Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. (7.G.A.1)
  2. Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle. (7.G.A.2)

Technological Literacy
- **Standard:** Students will develop the abilities to apply the design process.
  Benchmark:
  J. Make two-dimensional and three-dimensional representations of the designed solution. (11.6-8.J)
- **Standard:** Students will develop an understanding of and be able to select and use information and communication technologies.
  Benchmark:
  K. The use of symbols, measurements, and drawings promotes a clear communication by providing a common language to express ideas. (17.6-8.K)

Transfer

Students will be able to independently use their learning to: (product, high order reasoning)
- Students will create a sketch to transfer ideas of a working design using proper sketching and dimension techniques.

Meaning

Unit Understanding(s):	Essential Question(s):
Students will understand that: ● The ability to create a rapid, accurate sketch is an important skill to communicate ideas. ● Orthographic drawings of an object are used to provide information that a perspective drawing may not be able to show. ● Engineers apply dimensions to drawings to communicate size information.	**Students will keep considering:** ● What are pictorial drawings and how are they used by engineers? ● What is an orthographic drawing and how is it used by engineers? ● Why is it important to follow the “rules” of sketching and dimensioning?

Acquisition

Knowledge - Students will:	Skills - Students will:
It is expected that students will: ● Summarize the reasoning for using sketching as a communication tool.	● Create thumbnail, perspective, isometric, and orthographic sketches. ● Communicate ideas for a design using various sketching methods, notes, and drafting views.

● Recognize thumbnail, perspective, isometric, and orthographic sketches. ● Recognize one and two point perspective drawings. ● Accurately interpret one and two point perspective drawings. ● Dimension an orthographic sketch following the guidelines of dimensioning. **Reasoning - Students will:** ● Use visualization, spatial reasoning, and geometric shapes to sketch two and three dimensional shapes. ○ perspective ○ Isometric ○ orthographic	

Common Misunderstandings	**Essential new vocabulary**
● You can't over dimension ● Line conventions does not matter	● Annotation ● Centerline ● Depth ● Extension Line ● Height ● Views ● Width ● Line conventions