### Lesson Title: 3D Computer Aided Design

**Subject Area:** Math/Science/Computers  
**Grade Level:** 7th/8th  
**Duration:** 2 - 4 weeks  
**Format:** Groups of 2 - 3 students

**Overview:** Lesson focuses on how engineers use computer aided design software to make a 3D drawing/model.

**Educational Standards:**  
- MS-ETS1-4 - Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.  
- MP.4 Model with mathematics. (MS-PS1-1)  
- CCSS.MATH.CONTENT.7.G.B.6 Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

**Unit Question:** How can the use of CAD and 3D modeling be useful in the design process?  
**Focus Question/Purpose:** *What are the advantages of using CAD software?*

**Desired Outcomes:** Students will  
- produce various basic drawings using SketchUp CAD or the Web based Tinkercad software.  
- understand and utilize the Cartesian coordinate plane.  
- understand that engineers think in 3 dimensions (length, height, depth)

**Activity Details/Instructions:** Go through the online tutorials and practice with the shapes and objects they give the class. Students will then build a simple shed. Students will then build a design of their choice.