

## **BENCH BUILDING**

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### **Algebra I/Geometry/Tech**

#### **Scenario:**

A construction manager is responsible for coordinating, planning, managing and supervising construction projects. All construction projects require the cooperative efforts of each group member to do their part in each phase of the project whether it is in planning, designing, estimating cost or building. Contractors who accept orders to build indoor and outdoor furniture should be able to communicate with clients, show samples of their work and estimate the cost of the completed project.

The senior class gives a gift to the school each year as a remembrance for all future classes. Your senior group has chosen to construct an outdoor commemorative bench that will support three average people for less than \$250.00.

#### **Objectives:**

##### **I. Geometry Skills**

- √ Students will find angle relationships such as vertical angles linear pairs complementary angles and supplementary angles.
- √ Students will identify relationships between and among points, lines and planes (such as midpoint, distance, collinear, coplanar, parallel, and skew lines).
- √ Students will find the intersection of lines, planes, and solids.
- √ Students will connect geometric diagrams with algebraic representations.
- √ Students will integrate construction such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.
- √ Students will describe draw, and construct 2-dimensional and 3dimensional figures.
- √ Students will represent geometric figures
- √ Students will connect the concepts of slope, distance, and midpoint to coordinate geometry

##### **II. Career Technology Skills**

##### **III. Communication Skills**

##### **IV. Problem Solving Skills**

#### **Materials:**

Graph paper, building material, Advertisement, calculators, wood, nails, tools

**Activities:**

1. Discuss and assign project tasks to group members.
2. Use graph paper to construct a scale model of the bench or use CAD program.
3. Discuss math used in construction.
4. Price the materials to be used in constructing the bench.
5. Review and discuss cost estimates with group members.
6. Construct a materials and unit cost table and then determine the number of items needed and the total cost.
7. Build commemorative bench with the most feasible construction materials.

**Evaluation:**

- √ Submit a written summary of the activities completed
- √ Summarize project from beginning to the end in sequential order
- √ Present findings and model to class

*This project courtesy of the East Ridge High School Construction Career Academy  
Chattanooga, Tennessee*