MODEL DESIGN AND BUILDING

Additional checkoff sheets and helps are available from ScouterMom.com.

1. Study and understand the requirements for personal safety when using such modelmaker hand tools as knives, handsaws, vises, files, hammers, screwdrivers, hand drills and drill bits, pliers, and portable power tools, and when to use proper protective equipment such as goggles when grinding or drilling. Know what precautions to take when using flammable or hazardous products such as glue, epoxy, paint, and thinners. Discuss these with your counselor before you begin your modelmaking project and tell why they are important.										
2. Explain the uses for each of the following types of models: architectural, structural, process, mechanical, and industrial. Do research into the different types of materials that could be used in making these models.										
3. With your counselor's advice, select a subject from requirement 4 for your model project (no kits). Prepare the necessary plans to the proper scale. Make a list of materials and a list of the required tools. This model should be your own original work. Tell why you selected this subject.										
4. Do ONE of the following:										
4a. Make an architectural model. Build a model of a house to a scale of 1⁄4" = 1'0" (50:1 metric). Discuss with your counselor the materials you intend to use, the amount of detail required, outside treatment (finish, shrubbery, walks, etc.), and color selections. After completing the model, present it to your counselor for approval.										
4b. Build a structural model. Construct a model showing corner construction of a wood-frame building to a scale of 11⁄2" = 1'0" (8:1 metric). All structures shown must be to scale. Cardboard or flat sheet wood stock may be used for sheeting or flooring on the model. Review with your counselor the problems you encountered in gathering the materials and supporting the structure. Be able to name the parts of the floor and wall frames, such as intermediate girder, joist, bridging, subfloor, sill, sole plate, stud, and rafter.										
4c. Make a process model. Build a model showing the plumbing system in your house. Show hot and cold water supply, all waste returns, and venting to a scale of 3⁄4" = 1'0" (15:1 metric). Talk to your counselor about how to begin this model, and present the scale and the materials you will use. After completion, present the model to your counselor, and be prepared to discuss any problems you had building this model										
4d. Complete a mechanical model. Build a model of a mechanical device that uses at least two of the six simple machines. After completing the model, present it to your counselor. Be prepared to discuss materials used, the machine's function, and any particular difficulty you might have encountered.										

4e. Make an industrial model. Build a model of an actual passenger-carrying vehicle to a scale of 1" = 1'0" or 1⁄2" = 1'0" (10:1 or 25:1 metric). Take the dimensions of the vehicle and record the important dimensions. Draw the top, front, rear, and sides of the vehicle to scale. From your plans, build a model of the vehicle and finish it in a craftsmanlike manner. Discuss with your counselor the most difficult part of completing the model.										
5. Build a special-effects model of a fantasy spacecraft that might appear in a Hollywood science-fiction movie. Determine an appropriate scale for your design—one that makes practical sense. Include a cockpit or control area, living space, storage unit, engineering spaces, and propulsion systems. As you plan and build your model, do the following:										
5a. Study aircraft, submarines, and naval ships for design ideas.										
5b. Arrange and assemble the parts.										
5c. Sketch your completed model.										
5d. Write a short essay in which you discuss your design, scale, and materials choices. Describe how you engineered your model and discuss any difficulties you encountered and what you learned.										
6. Find out about three career opportunities in modelmaking. Pick one and find out the education, training, and experience required for this profession. Discuss this with your counselor, and explain why this profession might interest you.										
Completed										
Presented										