

## STUDY QUESTIONS FOR STEP 3

1. What is the function of the "Design Process"?

**To prepare a set of plans and specifications that guide machinists, welders, sheet metal workers, casting and molding operators, electronic technicians, painters and many other skilled workers in the completion of their work.**

2. List in your own word the ten (10) steps involved in the design of a product or a structure:

- 1. Identify, analyze and research the problem to get a complete description of the project.**
- 2. Think of possible solutions to the problem and make freehand, multiview and/or pictorial sketches of all ideas for solving the problem.**
- 3. Discuss all ideas with other designers, engineers, supervisors and managers.**
- 4. Fix and combine ideas after discussions into a "final" solution sketch.**
- 5. Prepare a design layout drawing to scale from the final solution sketch.**
- 6. Prepare scale detail and assembly drawings of all parts and sub-assemblies.**
- 7. Assemble complete specifications and a materials list of all parts.**
- 8. Make individual parts, inspect parts for accuracy, and assemble the parts to make a working prototype or scale model.**
- 9. Check assembly of parts and test the operation of the prototype for accuracy, reliability, and safety.**
- 10. Change detail and assembly drawings if necessary and prepare technical illustrations for manuals and brochures.**

3. What is the "designer's" role in the "Design Process"?

**Work with other designers analyzing problems and developing ideas into solutions.**

4. What is the "engineer's" role in the "Design Process"?

**Work with other designers to make an idea work, selects materials, production methods and prepares final layout drawing of the final design.**

5. What is the "technician's" role in the "Design Process"?  
**Work with engineers, drafters and tradesmen in the assembly and testing of prototypes.**
6. What is the "drafter's or detailer's" role in the "Design Process"?  
**Drafters work with Detailers making standardized drawings of basic parts and may become Detailers after eighteen to 24 months. Detailers work from engineer's layout drawings to prepare scale detail drawings of individual parts and assembly drawings of how parts fit together.**
7. What is the "illustrator's" role in the "Design Process"?  
**Work from detail drawings of individual parts and assembly drawings of how parts fit together to prepare three-dimensional drawings for owner's manuals, repair instructions, assembly instruction sheets, brochures, charts, and graphs.**
8. What is the "architect's" role in the "Design Process"?  
**Work with other architects, engineers and contractors in the design and construction of structures.**
9. A beginning drafter or cad operator is called **Apprentice** and can be promoted to **Senior Drafters** and **Detailer**.
10. What is the purpose of a "Design Project Statement"?  
**To describe the general considerations of the problem without indicating a solution. The statement must address five (5) general concerns: what, who, why, where and when.**
11. What is the purpose of a "Design Project Analysis"?  
**To get an idea of what the design will present before you start building.**