

3. Limited technical assistance for computer or software malfunction may be given by appropriate manufacturers' representatives or members of the technical committee.
4. Contestants will each be given the same amount of time to accomplish the problem. Everyone will begin at the same time and take the required lunch break, and no one will be allowed to work past the contest conclusion (additional time may be granted for equipment malfunction).
5. Each contestant will be responsible for establishing plotting procedures at the computer and for plotting his or her work to a plot file on a floppy disk, flash drive or CD.
6. Criteria to evaluate skill performance are general in nature and will be done from plotted drawings, manual drawings and sketches. Specific criteria will be based on the demonstration of competency in those elements of accuracy and productivity included in the contest problem.
7. Competencies to be demonstrated may be selected from the Standards and Competencies below.

Standards and Competencies

AD 1.0 — Demonstrate understanding of terms and principles used in the architectural profession

- 1.1 Define and use terms commonly used in the architectural profession
- 1.2 Explain the application of geometric objects to building materials
 - 1.2.1 Define the characteristics of an equilateral triangle and its application to architecture
 - 1.2.2 Define the characteristics of an isosceles triangle and its application to architecture
 - 1.2.3 Define the characteristics of a square and its application to architecture
 - 1.2.4 Define the characteristics of a parallelogram and its application to architecture
 - 1.2.5 Define the characteristics of an equilateral triangle and its application to architecture
 - 1.2.6 Define the characteristics of a hexagon and its application to architecture
 - 1.2.7 Define the characteristics of an octagon and its application to architecture
 - 1.2.8 Define the characteristics of a circle and its application to architecture

AD 2.0 — Interpret and apply conventional General Drafting Standards to architectural drafting situations

- 2.1 Define function of each line in the Alphabet of Lines
- 2.2 Explain the graphical characteristics of each line
 - 2.2.1 Visible/Object Lines: Thick solid lines that represent visible edges or contours of the part. Visible lines of floor plans are medium thickness (0.6mm)
 - 2.2.2 Hidden Lines: Hidden lines should always touch where the visible feature starts or ends (0.3mm). Hidden lines may be omitted from drawings for clarity purposes
 - 2.2.3 Section Lines: Section lines represent the area of the part that would be cut in a section view (0.3mm)
- 2.3 Explain orthographic elevation projection
 - 2.3.1 Architecturally, views are referred to as elevations
 - 2.3.2 Roof plan is the top view and front elevation is the front view, etc.
 - 2.3.3 Elevations are oriented on site with reference to true north or building north
- 2.4 Explain the terms and definitions used in detail drawings, working drawings and drafting
- 2.5 Define and describe the components that comprise architectural drawings
 - 2.5.1 Necessary multiviews
 - 2.5.2 Dimensional information
 - 2.5.3 Specified materials
 - 2.5.4 Revision block, title block and sheet size
 - 2.5.5 Drafter/reviewer names
 - 2.5.6 Enlarged views and sections showing detail
 - 2.5.7 General notes with construction information
 - 2.5.8 Schedules: doors, windows and room finishes
- 2.6 Define and describe the components that comprise architectural construction (working) drawings

AD 3.0 — Develop a set of working drawings from a provided scenario with provided materials using competencies identified for drafting certification by the American Design Drafting Association

- 3.1 Produce multi-view drawings with lines, curves, surfaces, holes, fillets, rounds, chamfers, run outs and ellipses

- 3.2 Use standard drafting techniques to create section views in order to improve the visualization of new designs
- 3.3 Clarify multi-view drawings and facilitate the dimensioning of drawings
- 3.4 Summarize and apply the principles and procedures for adding size information to a drawing according to standard dimensioning practices
- 3.5 Draw and label site plans, floor plans, foundation plans, plumbing plans, mechanical plans, electrical plans and landscaping plans with elevations, sections, details, schedules and necessary multiviews

Committee Identified Academic Skills

The technical committee has identified that the following academic skills are embedded in this contest.

Math Skills:

- Use fractions to solve practical problems
- Use proportions and ratios to solve practical problems
- Simplify numerical expressions
- Solve practical problems involving percents
- Solve single variable algebraic expressions
- Solve multiple variable algebraic expressions
- Measure angles
- Find surface area and perimeter of two-dimensional objects
- Find volume and surface area of three-dimensional objects
- Construct three-dimensional models
- Apply Pythagorean Theorem
- Make predictions using knowledge of probability
- Make comparisons, predictions and inferences using graphs and charts
- Organize and describe data using matrixes
- Graph linear equations
- Solve problems using proportions, formulas and functions
- Find slope of a line
- Solve practical problems involving complementary, supplementary and congruent angles
- Solve problems involving symmetry and transformation
- Use measures of interior and exterior angles of polygons to solve problems

Science Skills:

- Describe and recognize solids, liquids and gases
- Describe characteristics of types of matter based on physical and chemical properties

- Use knowledge of physical properties (shape, density, solubility, odor, melting point, boiling point, color)
- Use knowledge of classification of elements as metals, metalloids and nonmetals
- Use knowledge of mechanical, chemical and electrical energy
- Use knowledge of heat, light and sound energy
- Use knowledge of temperature scales, heat and heat transfer
- Use knowledge of sound and technological applications of sound waves
- Use knowledge of simple machines, compound machines, powered vehicles, rockets and restraining devices
- Use knowledge of principles of electricity and magnetism
- Use knowledge of static electricity, current electricity and circuits
- Use knowledge of motors and generators

Language Arts Skills:

- Provide information in conversations and in group discussions
- Provide information in oral presentations
- Demonstrate use of verbal communication skills, such as word choice, pitch, feeling, tone and voice
- Demonstrate use of nonverbal communication skills, such as eye contact, posture and gestures using interviewing techniques to gain information
- Analyze mass media messages
- Demonstrate comprehension of a variety of informational texts
- Use text structures to aid comprehension
- Identify words and phrases that signal an author's organizational pattern to aid comprehension
- Understand source, viewpoint and purpose of texts
- Organize and synthesize information for use in written and oral presentations
- Demonstrate knowledge of appropriate reference materials
- Use print, electronic databases and online resources to access information in books and articles
- Demonstrate narrative writing
- Demonstrate expository writing
- Demonstrate persuasive writing
- Demonstrate informational writing
- Edit writing for correct grammar, capitalization, punctuation, spelling, sentence structure and paraphrasing

Connections to National Standards

State-level academic curriculum specialists identified the following connections to national academic standards.

Math Standards

- Numbers and Operations
- Algebra
- Geometry
- Measurement
- Problem Solving
- Communication
- Connections
- Representation

Source: NCTM Principles and Standards for School Mathematics. To view high school standards, visit: standards.nctm.org/document/chapter7/index.htm. Select “standards” from menu.

Science Standards

- Understands forces and motion
- Understands the nature of scientific inquiry

Source: McREL Compendium of National Science Standards. To view and search the compendium, visit: www.mcrel.org/standards-benchmarks/.

Language Arts Standards

- Students adjust their use of spoken, written and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes
- Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.
- Students apply knowledge of language structure, language conventions (e.g., spelling and punctuation), media techniques, figurative language and genre to create, critique, and discuss print and nonprint texts
- Students conduct research on issues and interests by generating ideas and questions and by posing problems. They gather, evaluate and synthesize data from a variety of sources (e.g., print and nonprint texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience
- Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge
- Students use spoken, written and visual language to accomplish their own purposes

(e.g., for learning, enjoyment, persuasion, and the exchange of information)

Source: IRA/NCTE Standards for the English Language Arts. To view the standards, visit: www.readwritethink.org/standards/index.html.

CONTEST SCORECARD

Items Evaluated	Possible Points
Solution to Problem.....	400
Manual Drafting Technique.....	140
CAD Technique	140
Floor Plan	50
Exterior Elevation	50
Interior Elevation	50
Construction Detail.....	50
Accurate Dimensioning	40
Layout and Balance	20
Site Plan.....	20
Written Test	20
Oral Professional Assessment.....	20

Sub Total **1,000**

Résumé Penalty _____

Clothing Penalty _____

TOTAL _____