

# Unit 2 Technical Sketching and Drawing

## Unit 2 – Concepts & Objectives

Concepts	Objectives
Brainstorming may take many forms and is used to generate a large number of innovative, creative ideas in a short time.	<ul style="list-style-type: none"> <li>Generate and document multiple ideas or solution paths to a problem through brainstorming.</li> </ul>
Two- and three-dimensional objects share visual relationships which allow interpretation of one perspective from the other.	<ul style="list-style-type: none"> <li>Identify flat patterns (nets) that fold into geometric solid forms.</li> </ul>
Geometric shapes and forms are described and differentiated by their characteristic features.	<ul style="list-style-type: none"> <li>Explain the concept of proportion and how it relates to freehand sketching.</li> </ul>
The style of the engineering graphics and the type of drawing views used to detail an object vary depending upon the intended use of the graphic.	<ul style="list-style-type: none"> <li>Identify and define technical drawing representations including isometric, orthographic projection, oblique, perspective, auxiliary, and section views.</li> <li>Identify the proper use of each technical drawing representation including isometric, orthographic projection, oblique, perspective, auxiliary, and section views.</li> </ul>
Technical drawings convey information according to an established set of drawing practices which allow for detailed and universal interpretation of the drawing.	<ul style="list-style-type: none"> <li>Identify line types (including construction lines, object lines, hidden lines, cutting plane lines, section lines, and center lines) used on a technical drawing per ANSI Line Conventions and Lettering Y14.2M-2008 and explain the purpose of each line.</li> <li>Determine the minimum number and types of views necessary to fully detail a part.</li> <li>Choose and justify the choice for the best orthographic projection of an object to use as a front view on technical drawings.</li> <li>Apply tonal shading to enhance the appearance of a pictorial sketch and create a more realistic appearance of a sketched object.</li> </ul>
Hand sketching of multiple representations to fully and accurately detail simple objects or parts of objects is a technique used to convey visual and technical information about an object.	<ul style="list-style-type: none"> <li>Hand sketch 1-point and 2-point perspective pictorial views of a simple object or part given the object, a detailed verbal description or the object, a pictorial view of the object, and/or a set of orthographic projections.</li> <li>Hand sketch isometric views of a simple object or part at a given scale using the actual object, a detailed verbal description of the object, a pictorial view of the object, or a set of orthographic projections.</li> <li>Hand sketch orthographic projections at a given scale and in the correct orientation to fully detail an object or part using the actual object, a detailed verbal description of the object, or a pictorial an isometric view of the object.</li> </ul>
Sketches, drawings, and images are used to record and convey specific types of	<ul style="list-style-type: none"> <li>Create drawings or diagrams as representations of objects, ideas, events, or systems.</li> </ul>

information depending upon the audience and the purpose of the communication.	
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### **Essential Questions (Unit-Specific)**

1. How can we clearly convey the intent of a design to someone unfamiliar with the original problem or the solution?
2. How is technical drawing similar to and different from artistic drawing?
3. What can cause a technical drawing to be inadequate or misinterpreted?

### **Essential Questions (Course-Wide)**

1. How does the design process promote the development of good solutions to technical problems?
2. How can an engineer or technical professional effectively communicate ideas and solutions in a global community?
3. How do inventors and innovators impact and shape society?