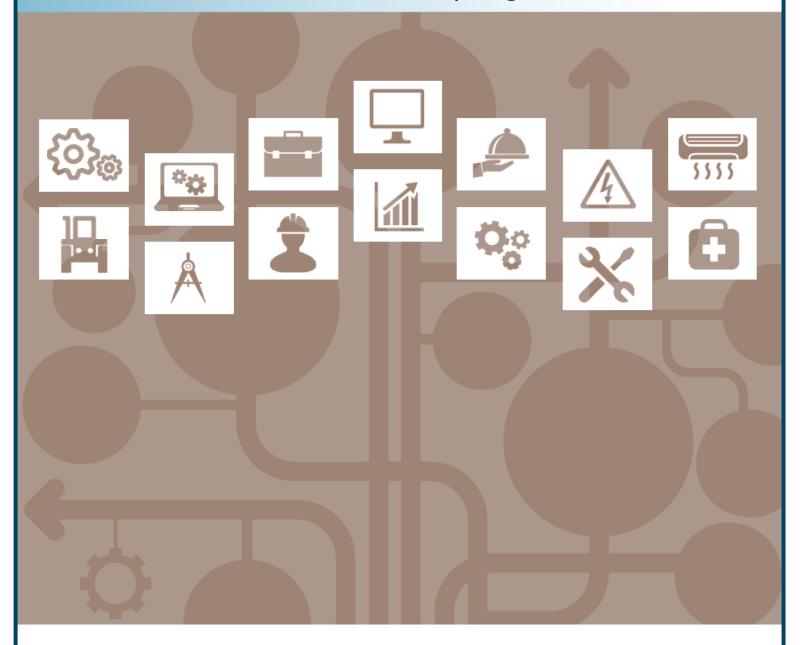


**Entry Level Assessment Blueprint** 

**Technical Drafting** 



Test Code: 4054 / Version: 01

## Specific Competencies and Skills Tested in this Assessment:

## **Basic Drawing Skills**

- Identify and demonstrate appropriate use of drafting tools, materials, and equipment
- Demonstrate knowledge of the use of CAD as a drafting tool
- Drawing standards and conventions
- Utilize appropriate drawing layout and scale
- Complete annotation on drawings
- Complete a title block
- Demonstrate sketching skills and techniques

### **Geometric Construction**

- Identify geometric terms and constructions
- Produce basic geometric constructions
- Construct lines at any given angle
- Construct irregular curved lines
- Construct geometric shapes and plane figures
- Draw lines
- Draw curved elements

### **Applied Mathematics**

- Basic mathematic operations
- Apply methods of measurement
- Calculate distance, area, and volume
- Calculate fractions and decimals
- Demonstrate conversion skills
- Calculate taper/slope
- Demonstrate knowledge of algebraic equations
- Demonstrate knowledge of geometry
- Demonstrate knowledge of trigonometry



## Specific Competencies and Skills continued:

## **Dimensioning Skills**

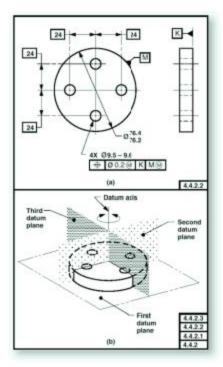
- Dimension basic features
- Apply local and general notes
- Interpret abbreviations and symbols
- Demonstrate metric dimensioning
- Demonstrate dual dimensioning
- Demonstrate tabular/charted dimensioning
- Demonstrate baseline dimensioning
- Demonstrate tolerancing practices
- Identify finished surfaces
- Demonstrate geometric dimension and tolerancing (GD&T)

# **Multiview Drawing**

- Produce basic orthographic views
- Produce auxiliary views
- Produce section views
- Produce intersections and developments
- Produce schematic drawings
- Produce pictorial drawings
- Produce detail working drawings
- Produce assembly drawings
- Demonstrate drawing revisions
- Produce modified part drawings

#### Threads and Fasteners

- Identify and apply fastener terminology and symbols
- Identify and apply screw thread terminology and symbols
- Produce threaded fastener drawings
- Produce common fasteners and applications



## Specific Competencies and Skills continued:

## **Manufacturing Processes**

- Demonstrate knowledge of machining operations
- Demonstrate knowledge of welding
- Demonstrate knowledge of various manufacturing processes
- Demonstrate knowledge of various materials
- Identify standard shop tools and equipment
- Demonstrate knowledge of mechanical components

# **Design Principles**

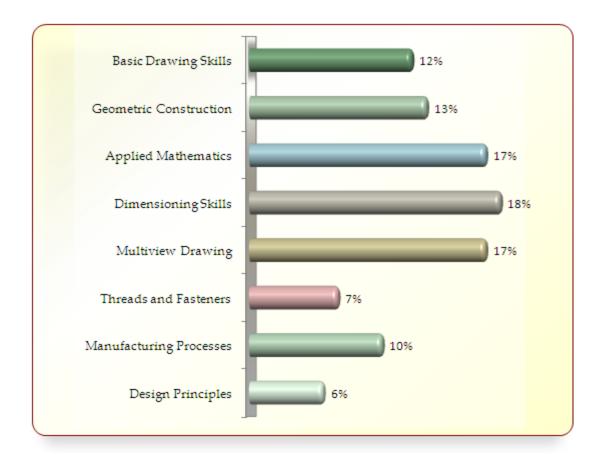
- Explain design guidelines (form, function, repetition, etc.)
- Identify steps of the design process/cycle
- Research and design a project
- Use reference materials



## **Written Assessment:**

**Administration Time:** 3 hours **Number of Questions:** 201

### **Areas Covered:**



# **Sample Questions:**

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- A. Baseline
- B. Cartesian
- C. Trigonometric
- D. Datum

A smooth curve created through a set of points is called a

- A. straight line
- B. perpendicular bisector
- C. spline
- D. polygon

Use \_\_\_\_\_ as metric units of measurements for dimensioning a working drawing.

- A. centimeters
- B. millimeters
- C. meters
- D. kilometers

Which type of screw thread is the most common in the United States?

- A. Whitworth
- B. Unified
- C. Sharp
- D. Worm

A part that is formed by pressing thin material down into a die block is called a

- A. stamping
- B. forging
- C. machine part
- D. weldment

### **Performance Assessment:**

**Administration Time:** 3 hours and 15 minutes

Number of Jobs: 4

#### **Areas Covered:**

### 30% Visualization

Sketching: isometric sketches – missing top view, missing right side view, and time to complete Job 1.

## 50% Orthographic Drawing

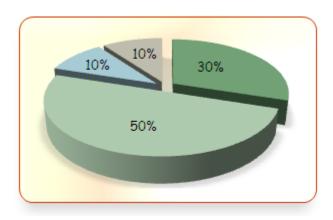
Dimensioning, scale, line type, cutting plane line, orientation, and location, appropriate areas hatched, correct placement of views, feature presentation, correct use of line types, geometric dimensioning, drawing information, and time to complete Job 2.

## 10% **Development**

Accurately developed (unfolded) pattern and time to complete Job 3.

## 10% Assembly

Bill of material and time to complete Job 4.



Sample Job: Assembly

**Maximum Time:** 15 Minutes

**Participant Activity:** The participant will examine the pictorial drawing and

develop a bill of material with all appropriate information

from the supplied assembly drawing.

