

Unit 1 — Bases for Blueprint Reading and Sketching

MULTIPLE CHOICE

1. Training in blueprint reading includes developing the ability to ____ the various manufacturing and fabricating processes required to make a part.
- | | |
|-------------|---------------|
| a. separate | c. synthesize |
| b. delegate | d. visualize |

ANS: D

PTS: 1

REF: 1

2. ____ give(s) the size and location of parts, shapes, and assemblies.
 - a. Sections
 - b. Geometric positioning
 - c. Dimensions
 - d. Non-graphical sketching

ANS: C

PTS: 1

REF: 2

3. ____ deal with accuracy related to form and size and position of finished surfaces where high precision is required.
- | | |
|---------------|---------------|
| a. Limits | c. Extensions |
| b. Tolerances | d. Margins |

ANS: B

PTS: 1

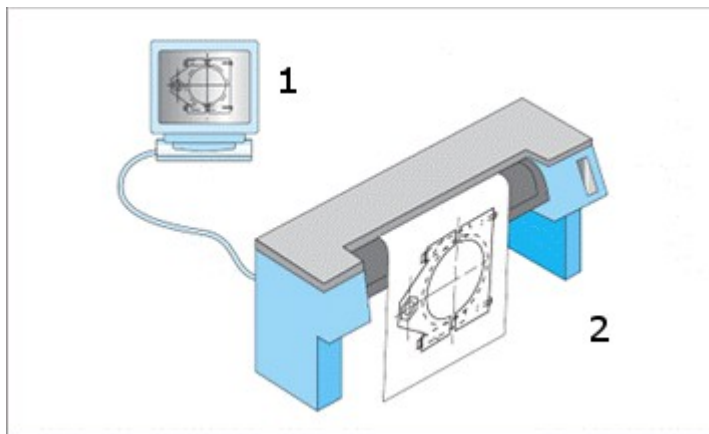
REF: 3

4. Traditionally, a blueprint of an original drawing, which may be made on high-quality paper, vellum, and acetate or polyester film, is produced by exposing the drawing to ____.
- a. a strong light source c. strong magnets
b. a weak light source d. ammonia

ANS: A

PTS: 1

REF: 3

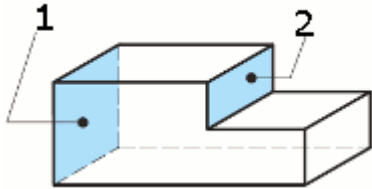


5. In the accompanying figure, the item numbered 2 represents ____.
- | | |
|--------------------|-------------------|
| a. computer-output | c. plotted-output |
| b. standard-output | d. digital-output |

ANS: C

PTS: 1

REF: 4



6. In the accompanying figure, the item identified as number 2 represents the feature known as the ____.
- end
 - face
 - reference point
 - seam

ANS: B

PTS: 1

REF: 7

7. Standard units of linear measurement in the SI metric system are all related to the ____.
- meter
 - inch
 - mile
 - pica

ANS: A

PTS: 1

REF: 8

SHORT ANSWER

1. Explain the purpose of blueprints.

ANS:

Blueprints provide a universal language by which all information about an object is furnished to the craftspeople, technicians, designers, assemblers, machine operators, and programmers, as well as after-market repairs and maintenance persons.

PTS: 1

REF: 1

2. Discuss how technical information can conveyed.

ANS:

Technical information about the shape and construction of a simple part may be conveyed from one person to another by the spoken or written word. As the addition of details makes the part or mechanism more complex, the designer, draftsman, engineer, technician, and mechanic must use precise methods to describe the object adequately.

Although a picture drawing or a photograph may be used to describe a part, neither method of representing an object shows the exact sizes, interior details, construction, or machining operations that are required. On the other hand, a drawing made accurately with instruments or produced by computer or a technical sketch meets the requirements for an accurate description of shape, construction, size, and other details.

PTS: 1

REF: 1

3. Describe the different standards-setting organizations.

ANS:

The American National Standards Institute (ANSI) and the International Organization for Standardization (ISO) have adopted drafting standards that are voluntarily accepted and widely used throughout the world. These systems incorporate and complement other engineering standards that are developed and accepted by such professional organizations as the American Society of Mechanical Engineers (ASME), the American Welding Society (AWS), the American Institute of Architects (AIA), and others. These standards-setting bodies deal with specific branches of engineering, science, and technology. Some large companies have adopted their own standards to suit their individual needs. Many blueprints and sketches in this text closely follow the ANSI and ISO standards and the current industrial practices.

PTS: 1 REF: 2

4. List and explain three common elements in drafting.

ANS:

Lines that, when combined with each other, provide graphic information about the external shape and details of an object.

Dimensions that give the size and location of parts, shapes, and assemblies.

Sections that are used to expose internal construction details when an object is cut apart by imaginary cutting planes.

Processes that are represented by symbols and notes for purposes of identifying how each part is to be produced.

Geometric positioning that deals with placing and accuracy of geometric objects in relationship to one another.

Notes and other non-graphical information clearly lettered (printed).

Tolerances that deal with accuracy related to form and size and position of finished surfaces, where high precision is required.

Materials that are used for making parts, including information about weight, strength, and hardness.

Computer-aided drafting (CAD) applications, where appropriate.

Technical sketching techniques for preparing line and form engineering and technical sketches to complement precise engineering drawings.

PTS: 1 REF: 2-3

5. Explain how microfilm is used for the storage of drawings and blueprints.

ANS:

Microfilm has been one of the most widely used procedures for many years and is still used in some places today. In this method, a greatly reduced photographic reproduction is made on film and then mounted into cardboard aperture cards. These cards are easy to file and keep track of. Many feel that they are also more durable.

PTS: 1 REF: 5

6. Explain CAD/CAM and how it is used.

ANS:

Some industries tie their engineering and manufacturing departments together using a CAD/CAM linkup over a computer network. CAM stands for computer-aided manufacturing. In this process, the drafting department designs a product on a computer. After completion, the drawing is converted to coordinate data and then stored. Additional software called a post processor then converts the stored coordinate data into a usable format for the machines in the manufacturing department. Hardcopy is not produced unless someone needs to study the drawing away from a computer terminal.

PTS: 1

REF: 6