



IED Glossary

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

A

Absolute Coordinates: The exact location of a specific point in terms of X, Y, and Z from the fixed point of origin.

Accuracy: 1. The condition or quality of being true, correct, or exact; precision; exactness. 2. The degree of correctness of a quantity or expression.

Accurate: Correct in all details.

Acute Triangle: A triangle that contains only angles that are less than 90 degrees.

Adhesive: Any synthetic product that is used to join materials together.

Adhesive Bonding: 1. A plastic joining technique in which a third substance bonds a plastic to another plastic or material such as metal, rubber, ceramic, glass, or wood. 2. The process of fastening parts of metal products together permanently with non-metallic materials.

Advertise: To present or describe a product, service, or event in a public medium so as to promote sales.

Aesthetic: 1. Concerned with beauty or the appreciation of beauty. 2. Of pleasing appearance.

Aligned Dimension: A system of dimensioning which requires all numerals, figures, and notes to be aligned with the dimension lines so that they may be read from the bottom (for horizontal dimensions) and from the right side (for vertical dimensions).

American National Standards Institute (ANSI): 1. A private, non-profit organization that coordinates the development and use of voluntary consensus standards in the United States. 2. The acronym for the American National Standards Institute.

American Society of Mechanical Engineers (ASME): 1. A professional engineering organization that is known for setting codes and standards for mechanical devices in the United States. ASME drawing standards are found in the Y-14M publications. 2. The acronym for the American Society of Mechanical Engineers.

Analysis: A detailed examination of the elements or structure of something.

Angle: The amount of rotation needed to bring one line or plane into coincidence with another, generally measured in radians or degrees.

Annotate: To add explanatory notes to.

Appendix: A section of additional information at the end of a document.

Arbitration: The hearing and determination of a dispute or the settling of differences between parties by a person or persons chosen or agreed to by them.

Area: The number of square units required to cover a surface.

Arrowheads: Arrowheads are used to indicate the end of a dimension line or leader.

Articulate: To clearly express an idea or feeling.

Assembly: A group of machine or handmade parts that fit together to form a self-contained unit.

Assembly Drawing: A drawing that shows the various parts of an item when assembled.

Assessment: An evaluation technique for technology that requires analyzing benefits and risks, understanding the trade-offs, and then determining the best action to take in order to ensure that the desired positive outcomes outweigh the negative consequences.

Asymmetry: Symmetry in which both halves of a composition are not identical. Also referred to as informal balance.

Audience: The assembled spectators or listeners at an event.

Attorney General: The principal legal officer of the Crown or a state.

Audience Analysis: The understanding of the consumer group for which the design is targeted. This would include the audiences, demographics, physical location, amount of time available to view the design, and interest in the subject matter.

Auxiliary View: An orthographic view of an object using a direction of sight other than one of the six basic views (front, top, right-side, rear, bottom, left-side); used to show a surface that is not parallel to any of the principal view planes.

Axis: 1. An imaginary line through a body, about which it rotates. 2. An imaginary line about which a regular figure is symmetrically arranged. 3. A fixed reference line for the measurement of coordinates.

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Balance: A condition in which different elements are equal or in the correct proportions. There are three types of visual balance: symmetry, asymmetry, and radial.

Balloons: A circled number identifying each part shown in an assembly drawing. Also called a ball tag or bubble number.

Baseline Dimensioning: System of dimensioning in which all dimensions are placed from a datum and not from feature to feature. Also referred to as Datum Dimensioning.

Bias: Inclination or prejudice in favor of a particular person, thing, or viewpoint.

Bilateral Tolerance: A tolerance in which variation is permitted in both directions from the specified dimension.

Black Box Model: A graphic system's illustration referred to as a *Black Box* because the internal components or process is deemed unknown, or mysterious.

Blind Hole: A hole that does not go completely through the workpiece.

Body Language: The conscious and unconscious bodily movements by which feelings are communicated.

Brainstorming: A group technique for solving problems, generating ideas, stimulating creative thinking, etc. by unrestrained spontaneous participation in discussion.

Break Line: A line used to interrupt a drawing if an object will not fit on a drawing sheet.

Brevity: 1. Concise and exact use of words. 2. Shortness of time.

Broken-Out Section: A section of an object broken away to reveal an interior feature for a sectional drawing.

By-product: Something produced in the making of something else; a secondary result; a side effect.

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Cabinet Oblique Drawing: A form of oblique drawing in which the receding lines are drawn at half scale, and usually at a 45 degree angle from horizontal.

Cabinet Oblique Sketch: A form of oblique sketch in which the receding lines are drawn at half scale, and usually at a 45 degree angle from horizontal.

Caliper: A measuring instrument having two usually adjustable jaws used especially to measure diameter or thickness.

Carcinogen: A substance capable of causing cancer.

Cartesian Coordinate System: A rectangular coordinate system created by three mutually perpendicular coordinate axes, commonly labeled X, Y, and Z.

Cavalier Oblique Drawing: A form of oblique drawing in which the receding lines are drawn true size, and usually at a 45 degree angle from horizontal.

Cavalier Oblique Sketch: A form of oblique sketch in which the receding lines are drawn true size, and usually at a 45 degree angle from horizontal.

Centerline: A line type that is used to indicate the axis of symmetry for a part or feature, the symmetrical alignment of a pattern of holes, and the path of motion for moving parts in an assembly.

Chain Dimensioning: Also known as point-to-point dimensioning where dimensions are established from one point to the next.

Chamfer: A small angled surface formed between two surfaces.

Circle: The set of all points in a plane at a given distance from a given point in the plane.

Circumscribe: 1. A triangle located round a polygon such as a circle. 2 To draw a figure around another, touching it at points but not cutting it.

Clarity: The state or quality of being clear and easily perceived or understood.

Class Interval: A group of values that is used to analyze the distribution of data.

Clearance Fit: The total gap between two mating parts, such as the difference in diameters between a cylindrical shaft and a hole.

Client: A person using the services of a professional person or organization.

Color: The property possessed by an object of producing different sensations on the eye as a result of the way it reflects or emits light.

Competitor: One who competes or is a rival of another business enterprise.

Component: A part or element of a larger whole.

Compound Machine: A mechanism that consists of two or more simple machines.

Compression: A force that pushes on or squeezes a material.

Computer-Aided Design or Computer-Aided Drafting (CAD): 1. For design, the use of a computer to assist in the process of designing a part, circuit, building, etc. 2. For drafting, the use of a computer to assist in the process of creating, storing, retrieving, modifying, plotting, and communicating a technical drawing.

Consensus: General agreement.

Constraint: 1. A limit to a design process. Constraints may be such things as appearance, funding, space, materials, and human capabilities. 2. A limitation or restriction.

Construction Line: Thin lines that serve as guides while sketching or drawing.

Contrast: 1. The state of being noticeably different from something else when put or considered together. 2. Enhancement of appearance provided by juxtaposing different colors or textures.

Convert: To change money, stocks, or units in which a quantity is expressed into others of a different kind.

Counterbore: A cylindrical recess around a hole, usually to receive a bolt head or nut.

Countersink: A conical-shaped recess around a hole, often used to receive a tapered screw.

Credible: Able to be believed; convincing.

Criteria: Principles or standards by which something may be judged or decided.

Critique: A detailed analysis and assessment.

Cube: A regular solid having six congruent square faces.

Cutting Plane Line: A line drawn on a view where a cut was made in order to define the location of the imaginary section plane.

Cylinder: A solid composed of two congruent circles in parallel planes, their interiors, and all the line segments parallel to the axis with endpoints on the two circles.

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Data: Facts and statistics used for reference or analysis.

Data Element: An individual value or bit of information.

Data Set: A group of individual values or bits of information that are related in some way or have some common characteristic or attribute.

Datum: A theoretically exact point, axis, or plane derived from the true geometric counterpart of a specific datum feature. The origin from which the location, or geometric characteristic of a part feature, is established.

Datum Dimension: A dimensioning system where each dimension originates from a common surface, plane, or axis. Also known as baseline dimensioning.

Decision Matrix: A tool for systematically ranking alternatives according to a set of criteria.

Degree: A unit of measurement of angles, equivalent to one ninetieth of a right angle.

Degree of Freedom: The variables by which an object can move. In assemblies, an object

floating free in space with no constraints to another object can be moved along three axes of translation and around three axes of rotation. Such a body is said to have six degrees of freedom.

Demographics: The statistical data of a population, esp. those showing average age, income, education, etc.

Depth: The distance from front to back.

Descriptive Abstract: A written summary that provides an overview of the purpose and contents of a report, but offers no major facts.

Design: 1. An iterative decision-making process that produces plans by which resources are converted into products or systems that meet human needs and wants or solve problems. 2. A plan or drawing produced to show the look and function or workings of something before it is built or made. 3. A decorative pattern.

Design Brief: A written plan that identifies a problem to be solved, its criteria, and its constraints. The design brief is used to encourage thinking of all aspects of a problem before attempting a solution.

Design Process: A systematic problem-solving strategy, with criteria and constraints, used to develop many possible solutions to solve a problem or satisfy human needs and wants and to winnow (narrow) down the possible solutions to one final choice.

Design Statement: A part of design brief that challenges the designer, describes what a design solution should do without describing how to solve the problem, and identifies the degree to which the solution must be executed.

Designer: A person who designs any of a variety of things. This usually implies the task of creating drawings or in some ways uses visual cues to organize his or her work.

Detail Drawing: A dimensioned, working drawing of a single part. Also referred to as part drawing.

Diameter: A straight line passing from side to side through the center of a circle or sphere.

Dimension: A measurable extent, such as the three principal dimensions of an object is width, height, and depth. Length and thickness are not used because they cannot be applied in all cases. The front view of an object shows only the height and width and not the depth. In fact, any one view of a three-dimensional object can show only two dimensions, the third dimension will be found in an adjacent view.

Dimension Lines: Lines that are thin lines capped with arrowheads, which may be broken along their length to provide space for the dimension numerals.

Documentation: 1. The documents that are required for something, or that give evidence or proof of something. 2. Drawings or printed information that contains instructions for assembling, installing, operating, and servicing.

Dual Dimensions: Where alternate units are displayed within the same dimension (both

metric and standard dimensions can shown at the same time).

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Ecosystem: A biological community of interacting organisms and their physical environment.

Edge: 1. The outside limit of an object, a surface, or an area. 2. The line along which two surfaces of a solid meet.

Element: A basic constituent part.

Ellipse: A regular oval shape, traced by a point moving in a plane so that the sum of its distances from two other points is constant, or resulting when a cone is cut by an oblique plane which does not intersect the base.

Emphasis: Special importance, value, or prominence given to something.

Engineer: A person who is trained in and uses technological and scientific knowledge to solve practical problems.

Engineer's Notebook: Also referred to as an Engineer's Logbook, a Design Notebook, or Designer's Notebook 1. A record of design ideas generated in the course of an engineer's employment that others may not claim as their own. 2. An archival record of new ideas and engineering research achievements.

English System: Also referred to as the U.S. Customary system. The measuring system based on the foot, second, and pound as units of length, time, and weight or mass.

Environmental Protection Agency (EPA): EPA is the acronym for the Environmental Protection Agency.

Ergonomics: The study of workplace equipment design or how to arrange and design devices, machines, or workspace so that people and things interact safely and most efficiently.

Ethical: Conforming to an established set of principles or accepted professional standards of contact.

Ethics: The moral principles governing or influencing conduct.

Evaluate: To form an idea of the amount or value of; assess.

Evolution: A gradual development.

Executive Summary: A persuasive summary that provides an overview of the purpose and contents of a report, identifies the issue or need that led to the report, and includes condensed conclusions and recommendations.

Exploded Assembly: An assembly drawing in which parts are moved out of position along an axis so that each individual part is visible.

Extension: 1. The property of an object by which it occupies space. 2. A set that includes a given and similar set as a subset.

Extension Lines: Thin lines used to establish the extent of a dimension. Extension lines begin with a short space from the object and extend to about .125 inches past the last dimension line. Extension lines may cross object lines, center lines, hidden lines, and other extension lines, but may not cross dimension lines.

Extrusion 1. A manufacturing process that forces material through a shaped opening. 2. A modeling process that creates a three-dimensional form by defining a closed two-dimensional shape and a length.

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Fastener: A hardware device that mechanically joins or affixes two or more objects together.

Fillet: A rounded interior blend between two surfaces. Some uses are to strengthen joining surfaces or to allow a part to be removed from a mold.

Fluid Power: Energy transmitted and controlled by means of a pressurized fluid, either liquid or gas. The term fluid power applies to both hydraulics and pneumatics.

Foot: A unit of linear measure equal to 12 inches or 30.48 cm.

Foreshorten: To show lines or objects shorter than their true size. Foreshortened lines are not perpendicular to the line of sight.

Form: 1. Having the three dimensions of length, width, and depth. Also referred to as a solid. 2. The organization, placement or relationship of basic elements, as volumes or voids in a sculpture, so as to produce a coherent image.

Formula: A mathematical relationship or rule expressed in symbols.

Freehand: Done manually without the aid of instruments such as rulers.

Frequency: The rate at which something occurs over a particular period or in a given sample.

Full Section: A sectional drawing based on a cutting plane line that extends completely through an object.

Function: The kind of action or activity proper to a person, thing, or institution; the purpose for which something is designed or exists; role.

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GANTT Chart: A time and activity bar chart that is used for planning, managing, and controlling major programs that have a distinct beginning and end.

General Notes: Notes placed separate from the views; relate to the entire drawing.

Geometric Constraint: Constant, non-numerical relationships between the parts of a geometric figure. Examples include parallelism, perpendicularity, and concentricity.

Gestalt: The principle that maintains that the human eye sees objects in their entirety before perceiving their individual parts.

Graph: A diagram showing the relation between variable quantities, typically of two variables measured along a pair of lines at right angles.

Graphic Design: The art of combining text and pictures in advertisements, magazines, books, etc.

Grid: A network of lines that cross each other to form a series of squares or rectangles.

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H

Half Section: A sectional drawing based on a cutting plane line that cuts through one-quarter of an object. A half section reveals half of the interior and half of the exterior.

Harmony: 1. The quality of forming a pleasing and consistent whole. 2. Agreement or concord.

Hazard: A danger or risk.

Height: The measurement of someone or something from head to foot or from base to top.

Hidden Line: A line type that represents an edge that is not directly visible, because it is behind or beneath another surface.

Histogram: A graph of vertical bars representing the frequency distribution of a set of data.

Hydraulics: A type of fluid power that uses pressurized liquid, for example, oil or water.

Hypothesis: 1. An assumption made on the basis of limited evidence as a starting point for further investigation. 2. A proposed explanation for an observation. Hypothesis is an educated guess which forms a basis for a test.

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I

Illustrate: 1. To provide a book or periodical with pictures. 2. To make clear by using

examples, charts, etc.

Impact: The effect or influence of one thing on another. Some impacts are anticipated, and others are unanticipated.

Inch: A unit of linear measure equal to one twelfth of a foot or 2.54 cm.

Innovation: An improvement of an existing technological product, system, or method of doing something.

Input: Something put into a system, such as resources, in order to achieve a result.

Inscribe: To draw a figure within another so that their boundaries touch but do not intersect.

International Organization for Standardization (ISO): A non-governmental global organization whose principal activity is the development of technical standards through consensus.

Interference: The amount of overlap that one part has with another when assembled.

Intonation: The rise and fall of the voice in speaking.

Invention: A new product, system, or process that has never existed before, created by study and experimentation.

Isometric Drawing: A form of pictorial drawing in which all three drawing axes form equal angles of 120 degrees with the plane of projection.

Isometric Sketch: A form of pictorial sketch in which all three drawing axes form equal angles of 120 degrees with the plane of projection.

Iterative: Describing a procedure or process that repeatedly executes a series of operations until some condition is satisfied. An iterative procedure may be implemented by a loop in a routine.

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Joinery: The process of connecting or joining two pieces of wood together through the use of various forms of wood joints. In fine woodworking, common forms of joinery include dovetail joinery, mortise-and-tenon joinery, biscuit joinery, lap joints, spline joints, etc.

Juxtapose: To place close together.

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K

Key: A rectangular or semicircular shape used to prevent parts, such as gears or wheels, from

turning on a shaft.

Keyseat: A slot in a shaft to receive a key.

Keyway: A slot in a hub or material around a shaft that receives a key.

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L

Landfill: A low area of land that is built up from deposits of solid refuse in layers covered by soil.

Leaders: Lines that are thin and used to connect a specific note to a feature.

Least Material Condition (LMC): The smallest size limit of an external feature and the largest size limit of an internal feature.

Legible: How recognizable a short amount of text is.

Limits of Dimension: The largest and smallest possible boundaries to which a feature may be made as related to the tolerance of the dimension.

Line: 1. A long thin mark on a surface. 2. A continuous extent of length, straight or curved, without breadth or thickness; the trace of a moving point. 3. Long, narrow mark or band.

Line Conventions: Standardization of lines used on technical drawings by line weight and style.

Line Weight: Also called line width. The thickness of a line, characterized as thick or thin.

Local Notes: Connected to specific features on the views of the drawing. Also known as annotations.

Location Dimension: A location dimension that defines the relationship of features of an object.

Logo: An emblematic design adopted by an organization to identify its products.

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M

Manufacture: To make something, especially on a large scale using machinery.

Manufacturer's Joint: The seam of a carton where the two edges of the box blank are joined together by stitching, gluing, or taping.

Manufacturing Process: The transformation of raw material into finished goods through one or more of the following: Casting and Molding, Shaping and Reshaping for forming, Shearing,

Pulverizing, Machining, for material removal, or Joining by transforming using heat or chemical reaction to bond materials.

Market Research: The activity of gathering information about consumers' needs and preferences.

Marketing: The promotion and selling of products or services.

Mass: The amount of matter an object contains.

Maximum Material Condition (MMC): The largest size limit of an external feature and the smallest size limit of an internal feature.

Mean: The average or central value of a set of quantities.

Measure: To determine the size, amount, or degree of something by comparison with a standard unit.

Measurement: The process of using dimensions, quantity, or capacity by comparison with a standard in order to mark off, apportion, layout, or establish dimensions.

Mechanical Fastener: A hardware device, such as a bolt or screw, that is used to mechanically join or affix two or more plastic objects together.

Mechanism: An assembly of moving parts completing a complete functional motion.

Median: Referring to the middle term or mean of the middle two terms of a series of values arranged in order of magnitude.

Mediation: The act or process of using an intermediary to effect an agreement or reconciliation.

Message Analysis: The process of deciding what information needs to go into the graphic design, as well as how to effectively use the design elements and principles to present the information. This analysis is based on a thorough analysis of the audience.

Meter: The fundamental unit of length in the metric system, equal to 100 centimeters or approximately 39.37 inches.

Metric System: The decimal measuring system based on the meter, liter, and gram as units of length, capacity, and weight or mass.

Millimeter: A metric unit of linear measure equal to 1/1000 of a meter.

Mock-up: Also referred to as an Appearance Model. A model or replica of a machine or structure for instructional or experimental purposes.

Mode: The value that occurs most frequently in a given data set.

Model: A visual, mathematical, or three-dimensional representation in detail of an object or design, often smaller than the original. A model is often used to test ideas, make changes to a

design, and to learn more about what would happen to a similar, real object.

Multiview Drawings: Views of an object projected onto two or more orthographic planes.

Multiview Sketches: Views of an object projected onto two or more orthographic planes.

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N

Negotiation: Mutual discussion and arrangement of the terms of a transaction or agreement.

Nominal Size: The designation of the size established for a commercial product.

Non-Renewable Resource: A resource or raw material that cannot be grown or replaced once used.

Normal Distribution: A function that represents the distribution of variables as a symmetrical bell-shaped graph.

Norms: Principles of right action, binding upon the members of a group and serving to guide, control, or regulate proper and acceptable behavior.

Numeric Constraint: A number value, or algebraic equation that is used to control the size or location of a geometric figure.

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O

Object Line: A heavy solid line used on a drawing to represent the outline of an object.

Oblique Drawing: A type of drawing involving a combination of a flat, orthographic front with depth lines receding at a selected angle, usually 45 degrees.

Oblique Sketch: A type of sketch involving a combination of a flat, orthographic front with depth lines receding at a selected angle, usually 45 degrees.

Observation: The act or instance of noticing or perceiving.

Obtuse Triangle: A triangle with one angle that is greater than 90 degrees.

Occupation Safety and Health Administration (OSHA): A government organization whose mission is to assure the safety and health of America's workers by setting and enforcing standards; providing training, outreach, and education; establishing partnerships; and encouraging continual improvement in workplace safety and health.

Offset Section: A sectional drawing created by a cutting plane bent at right angles to features

as though they were in the same plane.

Open-Ended: Not having fixed limits; unrestricted; broad.

Origin: A fixed point from which coordinates are measured.

Orthographic Projection: A method of representing three-dimensional objects on a plane having only length and breadth. Also referred to as Right Angle Projection.

Output: The results of the operation of any system.

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Packaging: Materials used to wrap or protect goods.

Parallelogram: A quadrilateral with opposite sides parallel.

Parameter: A quantity which is fixed for the case in question but may vary in other cases.

Parametric Modeling: A CAD modeling method that uses parameters to define the size and geometry of features and to create relationships between features. Changing a parameter value updates all related features of the model at once.

Part Interaction: A kind of action which occurs as two or more objects have an effect upon one another.

Parts List: A list of materials or parts specified for a project. Also referred to as a bill of materials or BOM.

Pattern: A repeated decorative design.

Perspective Drawing: A form of pictorial drawing in which vanishing points are used to provide the depth and distortion that is seen with the human eye. Perspective drawings can be drawn using one, two, and three vanishing points.

Perspective Sketch: A form of pictorial sketch in which vanishing points are used to provide the depth and distortion that is seen with the human eye. Perspective drawings can be drawn using one, two, and three vanishing points.

Persuasive: 1. Good at persuading someone to do or believe something. 2. Providing sound reasoning or argument.

Phantom Line: A line used to show the alternate positions of an object or matching part without interfering with the main drawing.

Pi: The numerical value of the ratio of the circumference of a circle to its diameter of approximately 3.14159.

Pictograph: A pictorial symbol for a word or phrase.

Pictorial Drawing: A drawing that shows an object's height, width, and depth in a single view.

Pictorial Sketch: A sketch that shows an object's height, width, and depth in a single view.

Plane: A flat surface on which a straight line joining any two points would wholly lie.

Pneumatics: A type of fluid power that uses compressed air or other neutral gases.

Point: A location in space. Points have no dimensions.

Polar Coordinates: The location of a point as given by an angle and a distance.

Polygon: A closed geometric figure in a plane formed by connecting line segments endpoint to endpoint with each segment intersecting exactly two others. Polygons are classified by the number of sides they have, such as a triangle has three sides, a quadrilateral has four sides, and a pentagon has five sides.

Portfolio: A set of pieces of creative work intended to demonstrate a person's ability.

Precise: Exact in measuring, recording, etc.

Precision: Exact in measuring, recording, etc.

Principle: The method of formation, operation, or procedure exhibited in a given instance.

Prism: A solid geometric figure whose two ends are similar, equal, and parallel rectilinear figures, and whose sides are parallelograms.

Problem: An unwelcome or harmful matter needing to be dealt with.

Problem Identification: The recognition of an unwelcome or harmful matter needing to be dealt with.

Problem Statement: A part of design brief that clearly and concisely identifies a client's or target consumer's problem, need, or want.

Process: 1. Human activities used to create, invent, design, transform, produce, control, maintain, and use products or systems; 2. A systematic sequence of actions that combines resources to produce an output.

Product: A tangible artifact produced by means of either human or mechanical work, or by biological or chemical process.

Product Lifecycle: Stages a product goes through from concept and use to eventual withdrawal from the market place.

Profile: An outline of something as seen from one side.

Projection Line: A horizontal or vertical line that can be used to locate entities in an adjacent

view.

Projection Plane: An imaginary surface on which the view of the object is projected and drawn. This surface is imagined to exist between the object and the observer.

Proportion: 1. The relationship of one thing to another in size, amount, etc. 2. Size or weight relationships among structures or among elements in a single structure.

Protocol: The accepted code of behavior in a particular situation.

Prototype: A full-scale working model used to test a design concept by making actual observations and necessary adjustments.

Protractor: An instrument for measuring angles, typically in the form of a flat semicircle marked with degrees along the curved edge.

Purpose: The reason for which something is done or for which something exists.

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Quadrilateral: A four-sided polygon.

Quality: The degree of excellence of something as measured against other similar things.

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R

Radial Symmetry: Symmetry about a central axis.

Radius: A straight line from the center to the circumference of a circle or sphere.

Range: The measure of variation that is the difference between the highest and lowest scores.

Ratio: The quantitative relation between two amounts showing the number of times one value contains or is contained within the other.

Raw Material: Any natural resource that is used to make finished products.

Readability: How easy an extended amount of text is to read.

Rectangle: A parallelogram with 90 degree angles. A square is also a rectangle.

Recycle: To reclaim or reuse old materials in order to make new products.

Reference Dimension: A dimension, usually without a tolerance, used for information purposes only. A reference is a repeat of a given dimension or established from other values shown on a drawing. Reference dimensions are enclosed in () on the drawing.

Refurbish: To renovate or redecorate.

Refuse: Matter thrown away as worthless.

Regular Polygon: A polygon with equal angles and equal sides.

Relative Coordinates: The location of a point as given by the distance from the last point specified.

Removed Section: A sectional view removed from the area of the cutting plane and positioned in another location.

Renewable Resource: A resource or raw material that can be grown and replaced.

Repeatability: The ability to replicate or duplicate a result.

Research: The systematic study of materials and sources in order to establish facts and reach new conclusions.

Residue: A small amount of something that remains after the main part has gone or been taken or used.

Reverse Engineering: The process of taking something apart and analyzing its workings in detail, usually with the intention to understand function, prepare documentation, electronic data, or construct a new or improved device or program, without actually copying from the original.

Revision Block: A brief listing of revisions made to a drawing since it was initially released to manufacture.

Revolution: Creating a 3D solid or surface by revolving a 2D shape about an axis.

Revolved Section: A sectional view that is revolved 90 degrees and perpendicular with the plane of projection.

Rhythm: A regularly recurring sequence of events or actions.

Rib: A relatively thin flat member acting as a brace support. Also called a web.

Right Triangle: A triangle that has a 90 degree angle.

Rotation: Turning around an axis or center point.

Round: A rounded exterior blend between two surfaces.

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Scale: 1. A straight-edged strip of rigid material marked at regular intervals and used to measure distances. 2. A proportion between two sets of dimensions used in developing

accurate, larger or smaller prototypes, or models of design ideas.

Scale Model: An enlarged or reduced representation of an object that is usually intended for study purposes.

Scoring: Making an impression or crease in a box blank to facilitate bending, folding, or tearing.

Section Lines: Lines that are used to represent the material through which a cut is made in order to show an interior sectional view.

Sectional View: A drawing that shows the interior of an object as it would appear if cut in half or quartered.

Sequential: Forming or following a logical order or sequence.

Shading: The representation of light and shade on a drawing or map.

Shape: The two-dimensional contour that characterizes an object or area, in contrast to three-dimensional form.

Size: How large or small a person or thing is.

Size Dimensions: Placed directly on a feature to identify a specific size or may be connected to a feature in the form of a note.

Sketch: A rough drawing representing the main features of an object or scene and often made as a preliminary study.

Snap-Fit: A molded-in piece in a plastic assembly that is designed to form a mechanical joint system where part-to-part attachment is accomplished with locating and locking features to connect components together.

Solid: A three-dimensional body or geometric figure.

Solid Modeling: A type of 3D CAD modeling that represents the volume of an object, not just its lines and surfaces. This allows for analysis of the object's mass properties.

Solution: 1. A method or process for solving a problem. 2. The answer to or disposition of a problem.

Space: 1. The dimensions of height, depth, and width within which all things exist and move. 2. A free or unoccupied area or expanse.

Spotface: A shallow recess like a counterbore, used to provide a good bearing surface for a fastener.

Square: A regular polygon with four equal sides and four 90 degree angles.

Standard: Something considered by an authority or by general consent as a basis of comparison.

Statistics: Collection of methods for planning experiments, obtaining data, organizing, summarizing, presenting, analyzing, interpreting, and drawing conclusions based on data.

Storming: A phase of team development that is marked by conflict.

Stress: The pressure or tension exerted on a material object.

Subassembly: An assembled part that is a part of a larger assembly.

Surface Area: 1. The sum of all the areas of all the faces or surfaces that enclose a solid. 2. The sum of all the areas of all surfaces of a solid.

Surface Finish: The waviness, roughness, lay, and flaws of a surface. Also referred to as surface texture.

Survey: An investigation of the opinions or experience of a group of people, based on a series of questions.

Symbol: A thing that represents or stands for something else, especially a material object representing something abstract.

Symbolism: 1. The use of symbols to represent ideas or qualities. 2. The symbolic meaning attached to material objects.

Symmetry: The correspondence in size, shape, and relative position of parts on opposite sides of a median line or about a central axis. Also referred to as formal balance.

Synergy: When the unit or team becomes stronger than the sum of the individual members.

System: A group of interacting, interrelated, or interdependent elements or parts that function together as a whole to accomplish a goal.

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T

Tap: To cut internal threads.

Taper: Gradual diminution of width or thickness in an elongated object.

Target Consumer: A person or group for which product or service design efforts are intended.

Team: A collection of individuals, each with his/her own expertise, brought together to benefit a common goal.

Teardown: The process of taking apart a product to better understand it.

Technical Report: A document that conveys the results of scientific and technical research, and provides recommendations for action.

Technical Working Drawing: A drawing that is used to show the material, size, and shape of a product for manufacturing purposes.

Tension: A force that pulls on a material.

Texture: The feel, appearance, or consistency of a surface, substance, or fabric.

Three-Dimensional: Having the dimensions of height, width, and depth.

Time Line Chart: A one-axis chart used to display past and/or future events, activities, requirements, etc., in the order they occurred or are expected to occur for the purposes of analysis and communication.

Title Block: A table located in the bottom right-hand corner of an engineering drawing that identifies, in an organized way, all of the necessary information that is not given on the drawing itself. Also referred to as a title strip.

Tolerance: The total permissible variation in a size or location dimension.

Tone: The general effect of color or of light and shade in a picture.

Torsion: The twisting of a material.

Trade-off: An exchange of one thing in return for another: especially relinquishment of one benefit or advantage for another regarded as more desirable.

Transition Fit: have limits of size indicating that either a clearance or an interference may result when mating parts are assembled.

Translation: Motion in which all particles of a body move with the same velocity along parallel paths.

Triangle: A polygon with three sides.

Two-Dimensional: Having the dimensions of height and width, height and depth, or width and depth only.

Type: Printed characters or letters.

Typography: The style and appearance of printed matter.

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U

Unidirectional Dimension: A dimensioning system which requires all numerals, figures, and notes to be lettered horizontally and be read from the bottom of the drawing sheet.

Unilateral Tolerance: A tolerance in which variation is permitted in only one direction from the

specified dimension.

Unit: A standard quantity in terms of which other quantities may be expressed.

Unity: The state of being united or forming a whole.

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V

Value: The lightness or darkness of a color in relation to a scale ranging from white to black.

Vanishing Point: A vanishing point is a point in space, usually located on the horizon, where parallel edges of an object appear to converge.

Variation: A change or slight difference in condition, amount, or level.

Variety: A thing which differs in some way from others of the same general class.

Vertex: Each angular point of a polygon, polyhedron, or other figure.

Views: Views is shorthand for multiview projection, which is a system used to view an object. The six mutually perpendicular directions any object may be viewed are top, front, right-side, rear, left-side, and bottom. Top, front, and right-side views are also referred to as the three regular views because they are the three views most frequently used.

Virtual Team: A group of people that rely primarily or exclusively on electronic forms of communication to work together in accomplishing goals.

Visualize: To form a mental image of; imagine.

Volume: The amount of space occupied by a substance or object or enclosed within a container.

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W

Waste: Material which is eliminated or discarded as no longer useful or required.

Width: The measurement or extent of something from side to side.

Working Drawings: Drawings that convey all of the information needed to manufacture and assemble a design.

Working Sketches: Sketches that convey all of the information needed to manufacture and assemble a design.

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X[Back to Top](#)**Y**[Back to Top](#)**Z**

Zoning: A system of numbers along the top and bottom margins, and letters along the left and right margins of a drawing sheet that allows the viewer to identify drawing features within a specific location or zone on the drawing.

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