

GLOSSARY OF TERMS

Acute angle - an angle whose measure is between 0 and 90 degrees.

Acute triangle - a triangle with all angles acute.

Adjacent angles - two coplanar angles that have a common side and a common vertex but no common interior points.

Adjacent - immediately next to each other.

Adjacent arcs - arcs on the same circle that have exactly one point in common.

Altitude of a triangle - in a triangle, a perpendicular segment from a vertex to the line containing the side opposite the vertex.

Angle - the union of two rays with a common end point, known as the vertex.

Angle bisector - a ray that divides an angle into two congruent angles.

Anti-prism - similar to prisms except the bases are twisted relative to each other and that the side faces are triangles, rather than quadrilaterals: the vertices are symmetrically staggered.

Arc - a portion of the circumference of a circle

Arch - a curved masonry construction for spanning an opening, consisting of a number of wedge-like stones.

Archimedean Solids - a highly symmetric, semi-regular convex polyhedron, composed of two or more types of regular polygons meeting in identical vertices. They are distinct from the Platonic Solids, which are composed of only one type of polygon meeting in identical vertices.

Architect - a person professionally engaged in the design of certain large constructions such as buildings and the like.

Area - the size a surface takes up measured in square units.

Atmospheric or Arial Perspective - A method of rendering the effect of spatial distance by subtle variations in color and clarity of representation. The earth's atmosphere blurs our vision of objects so the more atmosphere between the viewer and the object (meaning the more distance between them) the lighter and less clear an object will appear.

Balance - having the same weight (mass) on either side.

Base angles - the angles opposite the legs of an isosceles triangle.

Bi-conditional - combining a conditional and its converse into an “if and only if” statement. Both the conditional and its converse must be true.

Bisector - a line that divides an angle into two equal parts.

Block/space - the three-dimensional place in which an object can exist or events take place.

Blueprints - detailed drawings used for construction

Bridge - a structure spanning and providing a passage over a river, road, or the like.

Center point - the middle of an object; a point that is well-distant from the boundary of a figure.

Central angle - an angle whose vertex is the center of the circle.

Chord - a line segment that connects two points on a curve.

Circle - the set of all points equidistant from a given point referred to as the center.

Circumference - the distance around a circle.

Clay - a naturally occurring material composed primarily of fine-grained minerals, which show plasticity through a variable range of water content, and which can be hardened when dried or fired.

Collage - a work of art, primarily in the visual arts, made from an assemblage of different forms, thus creating a new whole.

Collapsoid - a class of non-convex collapsible polyhedra. They can be constructed by replacing each edge of a dodecahedron or icosahedron by the diagonal of a pyramid (with base removed). Thirty such pyramids are then fitted together using tabs.

Collinear - points that lie on the same line.

Compass - a tool used to draw arcs and circles.

Complementary angles - two angles whose measures add up to 90 degrees.

Composite - a structure or an entity made up of distinct components; a number with more than two factors.

Concave polygon - a polygon whose diagonals contain some points outside the polygon.

Conclusion - the “then” part of a conditional statement.

Concurrent - when three or more lines intersect at one point.

Conditional - an “if-then” statement.

Congruent - segments with the same length, angles whose measures are the same.

Congruent circles - circles that have congruent radii.

Congruent polygons - polygons that have congruent corresponding parts.

Conjecture - a conclusion reached by using inductive reasoning.

Construction - a drawing of a geometric figure using only a compass and a straightedge.

Contra-positive - the interchange and negation of both the hypothesis and conclusion of a conditional statement.

Converse - the interchange of the hypothesis and the converse of a statement.

Convex - polygon a polygon whose diagonals contain no points outside the polygon.

Coplanar - points and lines that lie in the same plane.

Corollary - a statement that follows directly from a theorem.

Counter example - one instance for which the hypothesis of a conditional is true and the conclusion is false.

Cube - a solid bounded by six equal squares, the angle between any two adjacent faces being a right angle.

Decahedron - is a polyhedron with 10 faces.

Deductive reasoning - a process of reasoning logically from given facts to a conclusion.

Deltahedron (hedra) - a polyhedron whose faces are all congruent equilateral triangles.

Design - usually considered in the context of applied art, engineering, architecture and other creative. As a verb, "to design" refers to the process of developing a plan for a product, structure, system, or component. As a noun, "a design" is used for either the final (solution) plan (e.g. proposal, drawing, model, description) or the result of implementing that plan.

Diagonal - a line segment connecting two nonadjacent vertices in a polygon.

Diameter - a segment that contains the center of the circle and has both endpoints on the circle.

Dipyramid - two pyramids symmetrically placed base-to-base, also called a bipyramid.

Dodecahedron - polyhedron consisting of 12 faces.

Edge - where two surfaces join or intersect.

Elevation - a scale drawing of the side, front, or rear of a structure.

Engineer - a person trained and skilled in the design, construction, and use of engines or machines, or in any of the various branches of engineering.

Equi-angular polygon - a polygon with all angles congruent.

Equi-angular triangle - a triangle with all angles congruent.

Equidistant - the same distance from something.

Equilateral - in a given shape, all sides have the same length.

Equilateral polygon - a polygon with all sides congruent.

Equilateral triangle - a triangle with all sides and angles congruent.

Equilateral hexagon - has 6 congruent sides.

Exterior angle - an angle of a polygon formed by a side and an extension of a side.

Face - a flat surface of a three-dimensional figure

Floor plan - a diagram of one room, apartment, or entire floor of a building, usually drawn to scale.

Foreshortened - to shorten the lines of (an object) in a drawing or other representation so as to produce an illusion of projection or extension in space.

Form - refers to the external three-dimensional outline, appearance or configuration of some thing.

Fresco - Painting on plaster, either dry or wet. In the latter method, the pigments are mixed with water and become chemically bound to the plaster.

Golden section - ratio between two portions of a line, or the two dimensions of a plane figure, where the lesser of the two is to the greater as the greater is to the sum of both.

Hexagon - a six-sided polygon.

Horizon line - A horizon "line" formed by the implied meeting point of earth and sky.

Horizontal - a line with a slope of zero.

Hypothesis - the "if" part of a conditional.

Icosahedron – any polyhedron having 20 faces, but usually a regular icosahedron is implied, which has equilateral triangles as faces.

Illustrate – visualizing, step-wise, sets of instructions; inspiring the viewer to feel emotion in such a way as to expand on a piece of visual art or the linguistic aspects of a narrative.

Impost block - the uppermost part of a column or pillar supporting an arch.

Indirect reasoning - a type of reasoning assumes the opposite is true, uses logical reasoning to reach a contradiction therefore resulting in proof.

Inductive reasoning - a type of reasoning that reaches conclusions based on a pattern of specific examples or past events.

Interior angle - an angle within a polygon.

Intersecting point - the unique point or position in space at which two lines cross or three planes meet.

Inverse - the negation of both the hypothesis and the conclusion of a conditional.

Irrational number - a real number that can be written as a non-repeating or non-terminating decimal, but not as a fraction.

IsoAxis - a rectangular grid divided into $36+24=60$ isosceles right triangles allocated into 6 identical pairs of strips.

Isosceles trapezoid - a quadrilateral with exactly one pair of parallel sides whose non-parallel sides are congruent.

Isosceles triangle - a triangle with at least two sides congruent.

Kaleidocycle - a set of solids, connected edge-to-edge to form a ring.

Keystone - the wedge-shaped piece at the summit of an arch, regarded as holding the other pieces in place.

Kite - a quadrilateral with two pairs of adjacent sides congruent and no opposite sides congruent.

Lateral area - total area of the surface of a three-dimensional object, not including the bases.

Lever - a bar supported at some stationary point (fulcrum) along its length and used to overcome resistance at a second point by application of force at a third point to establish balance.

Line - a series of points that extends in opposite directions without end.

Line segment - section of a line bounded by two endpoints.

Linear Perspective - creates the illusion of 3-D space on a 2-D surface by delineating a horizon line and multiple orthogonal lines. These recede to meet at one or more points on the horizon (vanishing points), giving the appearance of special depth.

Locus - a set of points that meets a stated condition.

Major arc - any arc longer than a semicircle.

Mandala - a geometric design often used as a sacred representation of the universe. The word itself means, circle.

Median of a triangle - a segment of a triangle whose endpoints are a vertex and the midpoint of the side opposite the vertex.

Metaphor - something used, or regarded as being used, to represent something else; emblem; symbol.

Midpoint - a point that divides a segment into two congruent segments.

Mid-segment - a segment that connects the midpoints of two sides of a triangle.

Minor arc - any arc shorter than a semicircle.

Mobile - material suspended in midair by wire or twine so that the individual parts can move independently, as when stirred by a breeze.

Mosaic - Patterns or pictures made by embedding small pieces of stone or glass (*tesserae*) in cement on surfaces such as walls and floors.

Nameplate - a flat, usually rectangular piece of metal, wood, or plastic on which the name of a person, company, etc., is printed or engraved.

Negation - the opposite meaning of a statement. For example, the negation of “a rose smells sweet” is “a rose does not smell sweet.”

Net - a flat shape that can be folded into a 3-dimensional solid.

Non-objective - in Fine Arts, not representing objects known in physical nature; nonrepresentational; no recognizable form.

Objective - a design or art object that has the idea, shape, or image of a specific recognizable object – e.g. a fish, bird, table, person, etc.

Obtuse angle - an angle whose measure is between 90 and 180 degrees.

Obtuse triangle - a triangle with one obtuse angle.

Octagon - eight-sided polygon.

Octahedron - one of the five Platonic Solids, it is a regular polyhedron with 8 faces that are congruent equilateral triangles.

One-point perspective - the drawing has a single vanishing point, usually (though not necessarily) directly opposite the viewer's eye and usually (though not necessarily) on the horizon line. All lines parallel with the viewer's line of sight recede to the horizon toward this vanishing point.

Opposite rays - collinear rays with the same endpoint. They form a line.

Orthogonal - Any line perpendicular to the picture plane that recedes into the painting. All of the orthogonals converge at the vanishing point.

Overlapping - extend over and cover a part of.

Parallel - when lines in the same plane do not cross, and the distance between the lines is consistent.

Parallelogram - a quadrilateral with both pairs of opposite sides parallel and both pairs of opposite sides congruent.

Pattern - repeated design or recurring sequence.

Pentagon(al) - five-sided polygon.

Perimeter - distance around the outside of a shape.

Perpendicular bisector - a segment, ray, line, or plane that is perpendicular to the segment at its midpoint.

Perpendicular lines - two lines that intersect and form right angles.

Perspective - the way an artist or an engineer represents the real, three-dimensional world on a flat or two-dimensional surface.

Picture plane - An imaginary reference plane between the observer and subject. The picture plane is always at a right angle to the line of vision (an imaginary line between the eye of the artist and the subject of the painting).

Plane - a flat surface that extends in all directions without end.

Platonic solids - convex polyhedra with equivalent faces composed of congruent convex regular polygons (Five platonic solids: tetrahedron, cube, octahedron, dodecahedron, and icosahedron).

Point - a location, it has no size. 0-dimensional mathematical object, which can be specified in n-dimensional space using coordinates.

Point of concurrency - the point at which three or more lines intersect.

Polygon - a closed plane figure with at least three sides. The sides intersect only at their endpoints and no adjacent sides are collinear.

Polyhedron (hedra) - a solid 3-dimensional plane faces.

Postulate - an accepted statement of fact.

Prism - the surface of a cylindrical solid whose base is a polygon.

Pyramid - a solid shape that has a polygon as a base and triangular faces that taper to a point (vertex).

Radial symmetry - the condition of having similar parts regularly arranged around a central axis; the property of symmetry about an axis.

Radius - a segment that has one endpoint at the center and the other endpoint on the circle.

Ray - a part of a line consisting of one endpoint and all the points of the line on one side of the endpoint.

Rectangle - a parallelogram with four right angles.

Regular polygon - a polygon that is equilateral and equiangular.

Regular polyhedron - a three-dimensional solid whose faces are all made from regular polygons.

Remote interior angles - for each exterior angle of a triangle, the two non-adjacent interior angles.

Repetition - the act of repeating an action or pattern.

Rhombus - a parallelogram with four congruent sides.

Right angle - angle that measures 90 degrees.

Right triangle - a triangle with one right angle (90 degrees).

Scalene triangle - a triangle with no sides congruent.

Score(ing) - a line made with a sharp instrument.

Segment - a part of a line consisting of two endpoints and all the points between them.

Segmental arch - a shallow arch; an arch that is less than a semicircle

Semicircle - a half circle, its measure is 180 degrees.

Semi-regular Polyhedra - polyhedra whose faces are regular polygons of two or more different types arranged similarly about each vertex

Shape - a form or outline; a pattern of objects.

Similar - polygons whose corresponding angles are congruent and whose corresponding sides are proportional.

Similarity ratio - the ratio of the lengths of the sides of similar polygons.

Skew - lines two lines that are not parallel and do not lie in the same plane.

Slab - a broad, flat, thick piece

Solid - the union of the surface and the region of space enclosed by a 3-D figure

Space - the set of all points.

Square - a parallelogram with four congruent sides and four right angles.

Star of David - a six-pointed star formed from two equilateral triangles; an emblem symbolizing Judaism.

Stereoscopic (Stereoscope) - three-dimensional imaging technique capable of recording three-dimensional visual information or creating the illusion of depth in an image. The illusion of depth in a two-dimensional image is created by presenting a slightly different image to each eye.

Straight angle - an angle whose measure is 180 degrees.

Straightedge - a ruler with no markings on it.

Supplementary angles - two angles whose measures add up to 180 degrees.

Symbolism - practice of representing things by means of symbols or of attributing symbolic meanings or significance to objects, events, or relationships.

Symmetry -the condition of having similar parts regularly arranged around a central axis; correspondence in size, shape, and relative position of parts on opposite sides of a dividing line or median plane.

Techniques - a procedure used to accomplish a specific activity or task; the way in which the fundamentals, as of an artistic work, are handled.

Tetrahedron - a platonic solid with four polyhedron vertices, six polyhedron edges, and four equivalent equilateral triangular faces.

Texture - the visual and tactile quality of a surface; the characteristic physical structure given to a material, an object, etc., by the size, shape, arrangement, and proportions of its parts.

Theorem - a conjecture that is proven.

Three-dimensional - having, or seeming to have, the dimension of depth as well as width and height.

Trapezoid - a quadrilateral with exactly one pair of parallel sides.

Triangle - three-sided polygon.

Trigonometry - the study of angles and of the angular relationships of planar and 3-D figures.

Truncated - shortened by having a part cut off; cut short.

Truth value - determination whether a conditional is true or false.

Two-dimensional - having the dimensions of height and width only.

Two-point perspective - uses two sets of orthogonal lines drawn to different two vanishing points.

Vanishing Point - The point on the horizon line where all of the orthogonals meet.

Vanishing lines - one of the lines converging to the vanishing point; the intersection of the parallel of any original plane and the picture.

Variation - A function that relates the values of one variable to those of other variables; Marked difference or deviation from the normal or recognized form, function, or structure.

Vertex - a point where surfaces meet - a corner.

Vertex angle - the angle formed by the legs of an isosceles triangle.

Vertical angles - angles whose sides are formed by opposite rays.

Vertical - when a line goes straight up and down, and whose slope is defined as infinite or undefined.

Visual Perspective - This is the term sometimes used to describe when an artist overlaps objects or decreases the size of distant objects to show depth. These two techniques are often considered a part of linear perspective.

Volume - the amount of space occupied by an object.

Voussoirs (Voussoir blocks) - one of the wedge-shaped stones forming the curved parts of an arch or vaulted ceiling.