

A

AA – an acronym for Angle-Angle

AAS – an acronym for Angle-Angle-Side

acute angle – an angle that measures less than 90°

acute triangle – a triangle with three acute angles

adjacent angles – two angles that have a common vertex and a common side but do not overlap

adjacent arcs – arcs of the same circle that share an endpoint

alternate exterior angles – two angles that lie outside two lines and on opposite sides of a transversal

alternate interior angles – two angles that lie between two lines and on opposite sides of a transversal.

altitude of a triangle – a line, ray, or segment drawn from a vertex of a triangle perpendicular to the line containing the opposite side.

angle – a figure formed by two rays sharing a common endpoint

angle bisector – a line, ray, or segment that divides an angle into two congruent adjacent angles

angle of depression – an angle formed between the horizontal line and the line of sight when an observer looks downwards

angle of elevation – an angle formed between the horizontal line and the line of sight when an observer looks upwards

angle of rotation – the amount of rotation measured in degrees

angle of rotational symmetry – the smallest angle through which a figure is rotated to map onto itself

apex – the vertex at the tip of a cone or pyramid

apothem – a segment from the center of a regular polygon perpendicular to one of the sides

arc – a portion of a circle

arc length – the length of an arc

arc measure – the measure of the central angle that intercepts an arc

area – the number of unit squares needed to fill a flat figure

ASA – an acronym for Angle-Side-Angle

axis of revolution – a line around which a two-dimensional figure is rotated to form a three-dimensional figure

B

base angles of an isosceles triangle – the two angles adjacent to the base of an isosceles triangle

base angles of a trapezoid – a pair of angles that share a base as a common side in a trapezoid

base of an isosceles triangle – the non-congruent side of an isosceles triangle

bases of a prism – the two parallel congruent faces of a prism

bases of a trapezoid – the parallel sides of a trapezoid

biconditional statement – a statement in the form “ p if and only if q ,” meaning both “if p , then q ” and “if q , then p .”

bisect – divide into two congruent parts

C

CASTC – an acronym for Corresponding Angles of Similar Triangles are Congruent

Cavalieri's Principle – a principle stating that if two solids have the same height and the same cross-sectional area at every level, then they have the same volume

center of a regular polygon – the center of the circumscribed and inscribed circles of a regular polygon

center of dilation – a point about which a figure is dilated

center of rotation – a point about which a figure is rotated

central angle – an angle formed by two radii in a circle or regular polygon

central angle of a regular polygon – an angle formed by two consecutive radii of a regular polygon

centroid – the point where the medians of a triangle intersect; the center of gravity

chord – a segment whose endpoints are on a circle

circle – the set of all points in a plane that are equidistant from a single point

circumcenter – the center of a circumcircle

circumcenter of a triangle – the point where the perpendicular bisectors of a triangle intersect; the point equidistant from the vertices of a triangle

circumcircle – a circle that passes through all vertices of a polygon

circumference – the distance around a circle

circumscribed circle – see *circumcircle*

collinear points – points that lie on a line

complementary angles – two angles whose sum is 90°

composite figures – a figure made up of two or more simple geometric figures

composite solid – a solid that is made up of more than one solid

composite transformation – two or more transformations performed one after another

concave polygon – a polygon with at least one interior angle greater than 180°

concurrent lines – lines that intersect at a single point

conditional statement – a statement in the form “if p , then q ” where p is the hypothesis and q is the conclusion

cone – a solid with one circular base and a curved lateral surface that tapers to a single point

congruence statement – a statement that shows which parts correspond in congruent figures

congruent angles – angles with the same measure

congruent arcs – arcs of the same circle or of congruent circles with equal measures

congruent circles – circles with congruent radii

congruent figures – figures with the same shape and size

congruent polygons – polygons whose corresponding sides and angles are congruent

congruent segments – segments with the same length

conjecture – a conclusion drawn by inductive reasoning

consecutive interior angles – two angles that lie between two lines and on the same side of a transversal

construction – a drawing of geometric figures using only a compass and a straightedge

convex polygon – a polygon with all interior angles less than 180°

coordinate geometry – the study of geometry using a coordinate system

coordinate proof – a type of proof that places figures on a coordinate plane and uses algebra to prove geometric concepts

coplanar figures – figures in the same plane

corresponding angles – two angles that have corresponding positions

counterexample – an example which proves a conjecture is false

CPCTC – an acronym for Corresponding Parts of Congruent Triangles are Congruent

cross section – the intersection of a solid and a plane

CSSTP – an acronym for Corresponding Sides of Similar Triangles are Proportional

cube – a rectangular prism with all sides congruent and all faces squares

cylinder – a solid with two parallel congruent circular bases connected by a curved lateral surface

D

deductive reasoning – a process of drawing conclusions based on known facts and the laws of logic

density – a measure of how compact a substance or object is; mass divided by volume

diagonal – a segment connecting two non-adjacent vertices

diameter of a circle – a segment that contains the center of a circle and has both endpoints on the circle

diameter of a sphere – a segment that contains the center of a sphere and has both endpoints on the sphere

dilation – a transformation that enlarges or reduces a figure

direct line segment – a segment that has an additional property of direction

direct proof – proof where you start with the given statement(s) and use the laws of logic to arrive at the statement to be proven

E

edge – the intersection of two faces in a three-dimensional figure

enlargement – a dilation where the scale factor is greater than 1

equiangular – having congruent angles

equiangular triangle – a triangle with three congruent angles

equidistant – equally distant

equilateral – having congruent sides

equilateral triangle – a triangle with three congruent sides

Euler's formula – an equation relating the number of faces, edges, and vertices in a polyhedron; $F + V = E + 2$

exterior angle of a polygon – an angle formed by extending a side of a polygon

F

face – a flat surface of a three-dimensional figure

flowchart proof – a type of proof that uses boxes and arrows to show the flow of a logical argument

G

geometric mean – a special type of average; the positive square root of the product of two numbers

great circle – the largest possible circle that can be drawn around a sphere

H

height of a cone – the distance from the apex to the base of a cone

height of a cylinder – the distance between the two bases of a cylinder

height of a prism – the distance between the two bases of a prism

height of a pyramid – the distance from the apex to the base of a pyramid

hemisphere – half a sphere radius of a sphere – segment from the center of a sphere to any point on the sphere

HL – an acronym for Hypotenuse-Leg

hypotenuse – the side of a right triangle opposite the right angle; the longest side of a right triangle

I

image of a transformation – a figure resulting from a transformation

incenter – the center of an incircle

incenter of a triangle – the point where the angle bisectors of a triangle intersect; the point equidistant from the sides of a triangle

incircle – a circle that touches all sides of a polygon; the largest circle that fits inside a polygon

included angle – an angle between two adjacent sides of a polygon

indirect proof – a type of proof that prove a statement to be true by proving the opposite of the statement to be false

inductive reasoning – a process of drawing conclusions based on patterns observed

inscribed angle – an angle formed in a circle by two chords with a common endpoint

inscribed circle – see *incircle*

inscribed polygon – a polygon with every vertex on a circle

intercepted arc – an arc lying between two lines, rays, or segments

interior angle of a polygon – an angle formed by two adjacent sides of a polygon

irregular polygon – a polygon that is not equilateral and equiangular

isometry – see *rigid transformation*

isosceles trapezoid – a trapezoid with non-parallel sides congruent

isosceles triangle – a triangle with two congruent sides

K

kite – a quadrilateral with exactly two pairs of adjacent congruent sides

L

lateral area – the surface area of the lateral surfaces of a solid

lateral edge – the intersection of two lateral faces

lateral face – a face of a solid that is not a base

legs of an isosceles triangle – the two congruent sides of an isosceles triangle

legs of a right triangle – the sides adjacent to the right angle in a right triangle

legs of a trapezoid – the non-parallel sides of a trapezoid

line – a set of points extending endlessly in both directions

linear pair – a pair of adjacent angles that form a straight angle

line of reflection – a line across which a figure is reflected

line of symmetry – a line that divides a figure into two mirror images

line segment – see *segment*

line symmetry – see *reflection symmetry*

M

major arc – an arc longer than half a circle

measure of an arc – see *arc measure*

median of a trapezoid – see *midsegment of a trapezoid*

median of a triangle – a segment connecting a vertex of a triangle to the midpoint of the opposite side

midpoint – a point that bisects a segment

midsegment of a trapezoid – a segment connecting the midpoints of the legs of a trapezoid

midsegment of a triangle – a segment connecting the midpoints of two sides of a triangle

minor arc – an arc shorter than half a circle

mirror line – see *line of symmetry*

N

net – a two-dimensional shape that can be folded to form a solid

non-vertex angles of a kite – the angles formed by two non-congruent sides of a kite

O

oblique cylinder – a cylinder with bases that are not aligned one directly above the other

oblique prism – a prism with bases that are not aligned one directly above the other

oblique pyramid – a pyramid with apex not directly above the center of the base

obtuse angle – an angle that measures greater than 90° and less than 180°

obtuse triangle – a triangle with an obtuse angle

order of rotational symmetry – the number of times a figure maps onto itself in one full turn

orthocenter – the point where the altitudes of a triangle intersect

P

paragraph proof – a type of proof written in paragraph form

parallel lines – coplanar lines that do not intersect

parallelogram – a quadrilateral with both pairs of opposite sides parallel

partition a segment – divide a segment into two segments with a given ratio

perpendicular bisector – a line, ray, or segment that bisects another segment at right angles

perpendicular lines – lines that intersect at right angles

plane – a flat surface extending endlessly in all directions

point – an exact location in space

point of concurrency – the point where three or more lines intersect

point of tangency – the point where a tangent line intersects a circle

polygon – a closed plane figure formed by three or more segments

polyhedron – a solid whose surfaces are polygons

population density – a measure of how crowded an area is; the total number of people divided by the total land area

postulate – a statement that is accepted as true without proof

preimage of a transformation – the original image before a transformation

prism – a polyhedron with two parallel congruent polygons connected by parallelograms

proof – a logical argument that explains why a statement is true

proof by contradiction – see *indirect proof*

pyramid – a polyhedron with one polygonal base and triangular lateral faces that meet at a single point

Pythagorean theorem – an equation relating the lengths of the sides of a right triangle; $a^2 + b^2 = c^2$ where a and b are the legs of a right triangle and c is the hypotenuse

Pythagorean triple – a set of three positive integers that satisfies the Pythagorean Theorem

Q

quadrilateral – a figure with four straight sides

R

radian – a unit for measuring angles; one radian is the measure of an arc whose length equals the radius of its circle

radius of a circle – a segment from the center of a circle to any point on the circle

radius of a cone – the radius of the base of a cone

radius of a cylinder – the radius of the bases of a cylinder

radius of a regular polygon – a segment connecting the center of a regular polygon and one of the vertices

ray – a part of a line with only one endpoint

rectangle – a quadrilateral with four right angles

rectangular prism – a prism with rectangular bases

reduction – a dilation where the scale factor is between 0 and 1

reflection – a transformation that flips a figure over a line

reflection symmetry – a type of symmetry where a figure can be divided in half by a line so that each half is a mirror image of the other

regular polygon – a polygon with congruent sides and angles

regular pyramid – a pyramid whose base is a regular polygon and whose lateral faces are congruent isosceles triangles

rhombus – a quadrilateral with four congruent sides

right angle – an angle that measures 90°

right cone – a cone with apex directly above the center of the base

right cylinder – a cylinder with bases that are aligned one directly above the other

right prism – a prism with bases that are aligned one directly above the other; a prism whose lateral faces and lateral edges are perpendicular to its bases; a prism whose lateral faces are rectangles

right pyramid – a pyramid with apex directly above the center of the base

right triangle – a triangle with one right angle

rigid transformation – a transformation that does not change the size or shape of a figure

rotation – a transformation that turns a figure around a fixed point

rotational symmetry – a type of symmetry where a figure maps onto itself more than once in one full turn of 360°

S

SAS – an acronym for Side-Angle-Side

scale factor – a ratio between two corresponding sides of similar figures

scalene triangle – a triangle with no congruent sides

secant – a line that intersects a circle at two points

secant segment – a segment of a secant line that has exactly one endpoint on a circle

sector of a circle – a piece-of-pie-shaped portion of a circle enclosed by two radii and their intercepted arc.

segment – a part of a line with two endpoints

segment bisector – a point, line, ray, segment, or plane that divides a segment into two congruent segments

segment of a circle – a portion of a circle enclosed by a chord and the arc intercepted by the chord

semicircle – an arc that is half a circle

side splitter – a line segment that splits two sides of a triangle

similar figures – figures that have the same shape but not necessarily the same size

similarity statement – a statement that shows which parts correspond in similar figures

similarity transformation – a dilation or a composition of dilations and rigid transformations

slant height – the shortest distance from the apex of a cone or pyramid to the edge of the base

slope of a line – the steepness of a line

SOH-CAH-TOA – an acronym for Sine is Opposite over Hypotenuse, Cosine is Adjacent over Hypotenuse, and Tangent is Opposite over Adjacent

solid – a three-dimensional figure that occupies space

solid of revolution – a solid created by rotating a two-dimensional figure around a straight line

solve a triangle – find all side lengths and angle measures of a triangle

sphere – the set of all points in space that are equidistant from a single point

square – a quadrilateral with four congruent sides and four right angles

SSS – an acronym for Side-Side-Side

straight angle – an angle that measures 180°

supplementary angles – two angles whose sum is 180°

surface area – the total area of the exterior surface of a solid.

T

tangent – a line intersecting a circle in exactly one point

tangent segment – a segment of a tangent line that has one endpoint at the point of tangency

theorem – a statement that can be proven true using definitions, postulates, and previously proven theorems

transformation – an operation that changes a figure to create a new figure

transformational proof – a type of proof that uses transformations

translation – a transformation that moves every point of a figure the same distance in the same direction

transversal – a line that intersects two or more coplanar lines at distinct points

trapezoid – a quadrilateral with exactly one pair of parallel sides

triangle – a figure formed by three segments connecting three noncollinear points

trigonometric ratio – a ratio of two sides of a right triangle

trigonometry – the study of the relationships between the sides and angles of triangles

two-column proof – a type of proof that uses a table with two columns, where the left column is for statements that we know to be true and the right column is for the reasons why the statements are true

V

vertex angle of an isosceles triangle – the angle formed by the two congruent sides of an isosceles triangle

vertex angles of a kite – the angles formed by two congruent sides of a kite

vertex of an angle – a point where the sides of an angle meet

vertex of a polygon – a point where two sides of a polygon meet

vertex of a polyhedron – a point where two or more edges of a polyhedron meet

vertical angles – angles opposite each other where two lines cross

volume – the number of unit cubes needed to fill a solid