develop an awareness of the structure of a mathematical system, connecting definitions, postulates, logical reasoning, and theorems. [Geo.1A]

recognize the historical

development of geometric

systems and know

mathematics is developed for

a variety of purposes.[Geo.1B]

compare and contrast the

- structures and implications of
- Euclidean and non-Euclidean
- geometries.[Geo.1C]

use constructions to explore

attributes of geometric

figures and to make

conjectures about geometric

relationships.[Geo.2A]

make conjectures about angles, lines, polygons, circles, and three-dimensional figures and determine the validity of the conjectures, choosing from a variety of approaches such as coordinate, transformational, or axiomatic. [Geo.2B]

determine the validity of a

conditional statement, its

converse, inverse, and

contrapositive.[Geo.3A]

construct and justify

statements about geometric

figures and their properties.

[Geo.3B]

use logical reasoning to prove statements are true and find counter examples to disprove statements that are false. [Geo.3C]

use inductive reasoning to

formulate a conjecture.

[Geo.3D]

use deductive reasoning to prove a statement.[Geo.3E]

select an appropriate representation (concrete, pictorial, graphical, verbal, or symbolic) in order to solve problems. [Geo.4A]

Geometry

geometric properties.[Geo.5A]

patterns to develop algebraic

use numeric and geometric

expressions representing

use numeric and geometric patterns to make generalizations about geometric properties, including properties of polygons, ratios in similar figures and solids, and angle relationships in polygons and circles.[Geo.5B]

use properties of transformations and their compositions to make connections between mathematics and the real world, such as tessellations.[Geo.5C]

identify and apply patterns from right triangles to solve meaningful problems, including special right triangles (45-45-90 and 30-60-90) and triangles whose sides are Pythagorean triples.[Geo.5D]

describe and draw the intersection of a given plane with various three-dimensional geometric figures.[Geo.6A]

use nets to represent and

construct three-dimensional

geometric figures.[Geo.6B]

use orthographic and isometric views of three-dimensional geometric figures to represent and construct three-dimensional geometric figures and solve problems.[Geo.6C]

use one- and two-dimensional coordinate systems to represent points, lines, rays, line segments, and figures. [Geo.7A]

use slopes and equations of lines to investigate geometric relationships, including parallel lines, perpendicular lines, and special segments of triangles and other polygons. [Geo.7B]

derive and use formulas involving length, slope, and midpoint.[Geo.7C]

find areas of regular polygons, circles, and composite figures. [Geo.8A]

find areas of sectors and arc

lengths of circles using

proportional reasoning.

[Geo.8B]

derive, extend, and use the Pythagorean Theorem.[Geo.8C]

find surface areas and volumes of prisms, pyramids, spheres, cones, cylinders, and composites of these figures in problem situations.[Geo.8D]

use area models to connect geometry to probability and statistics.[Geo.8E]

use conversions between

measurement systems to solve

problems in real world

situations.[Geo.8F]

formulate and test conjectures about the properties of parallel and perpendicular lines based on explorations and concrete models.[Geo.9A]

formulate and test conjectures about the properties and attributes of polygons and their component parts based on explorations and concrete models.[Geo.9B] formulate and test conjectures about the properties and attributes of circles and the lines that intersect them based on explorations and concrete models.[Geo.9C]

analyze the characteristics of polyhedra and other threedimensional figures and their component parts based on explorations and concrete models.[Geo.9D]

use congruence transformations to make conjectures and justify properties of geometric figures including figures represented on a coordinate plane.[Geo.10A]

justify and apply triangle congruence relationships. [Geo.10B]

use and extend similarity

properties and

transformations to explore

and justify conjectures about

geometric figures.[Geo.11A]

use ratios to solve problems

involving similar figures.

[Geo.11B]

develop, apply, and justify triangle similarity relationships, such as right triangle ratios, trigonometric ratios, and Pythagorean triples using a variety of methods.[Geo.11C]

describe the effect on perimeter, area, and volume when one or more dimensions of a figure are changed and apply this idea in solving problems.[Geo.11D]