

NPSPD Middle & High School Curriculum

Department: Mathematics

Course: Geometry

Students will perform and compare transformations.

Promise Standards

- 1A - I can perform a rigid transformation and understand their characteristics and notations. (G-CO.A.2)
- 1B - I can perform dilations and understand their characteristics and notations. (G-CO.A.2)

Essential Learning Targets

- ELT 1 - I can define and determine rigid transformations (rule or verbal). (G-CO.B.6, G-CO.A.2, G-CO.A.4)
- ELT 2 - I can describe a rigid transformation (translation, reflection, rotation - from/with rule, corresponding image, or verbal). (G-CO.A.2, G-CO.A.3, G-CO.A.5)
- ELT 3 - I can perform a rigid transformation (translation, rotation, reflection - from/with a description or rule). (G-CO.A.2, G-CO.A.5, G-CO.B.6)
- ELT 4 - I can define and determine dilations (scale factor, point of dilation, or verbal description). (G-CO.A.2)
- ELT 5 - I can describe a dilation (scale factor, point of dilation, or verbal description). (G-CO.A.2)
- ELT 6 - I can perform a dilation (scale factor, point of dilation, or verbal description). (G-CO.A.2)
- ELT 7 - I can make geometric constructions with a variety of tools and methods (compass, straight edge, string, reflexive device, paper folding, computer generated). ([G.CO.D.12](#))
- ELT 8 - I can compare transformations (rigid vs. dilations). (G-CO.A.2, G-CO.A.3)
- ELT 9 - I can verify experimentally the properties of dilations given by a center and a scale factor. (G.SRT.A.1)
- SS 1 - I can construct an equilateral triangle, square, and a regular hexagon inscribed in a circle. ([G.CO.D.13](#))
- SS 2 - I can construct the inscribed and circumscribed circles of a triangle (G.C.A.3)

Students will be able to establish and justify geometric properties and theorems completely.

Promise Standards

- 2A - I can find the slopes of lines and interpret their meaning. (G-GPE.B.5)
- 2B - I can explain and prove whether or not shapes are similar. (G-CO.A.5)
- 2C - I can explain and prove whether or not shapes are congruent. (G-CO.B.6, [G.CO.C.10](#))
- 2D - I can prove theorems about lines and angles. (G-CO.C.9)
- 2E - I can prove theorems about triangles (G-CO.C.10)
- 2F - I can use a coordinate proof to establish geometric properties and for identification. (G.GPE. B.4)
- 2G - I can use congruence and similarity in triangles to prove relationships in geometric figures. (G.SRT.B.5)

Essential Learning Targets

- ELT 1 - I can define and prove parallel and perpendicular lines (including slopes or angles converse). (G-CO.C.1, G-CO.C.9)
- ELT 2 - I can prove triangles similar (transformations, SAS, SSS, AA) (G-CO.5, G.SRT.A.3)
- ELT 3 - I can establish congruence in terms of rigid transformations. (G-CO.B.6)
- ELT 4 - I can use corresponding parts of triangles to establish congruence. (G-CO.B.7)
- ELT 5 - I can establish ASA, SAS, and SSS based on rigid transformations. ([G.CO.B.8](#))

NPSP Middle & High School Curriculum

- ELT 6 - I can prove triangles congruent (rigid transformations, SAS, SSS, ASA, AAS, HL) (G-CO.B.7, [G.CO.C.10](#))
- ELT 7 - I can establish the properties and theorems for complementary, supplementary, and vertical angles. (G-CO.C.9)
- ELT 8 - I can establish the properties and theorems for angles formed by transversals. (G-CO.C.9)
- ELT 9 - I can establish the triangle sum theorem and base angles theorem. ([G.CO.C.10](#))
- ELT 10 - I can establish the midsegment theorem of a triangle ([G.CO.C.10](#))
- ELT 11 - I can find and use the slopes of lines to establish reflection. (G-GPE.B.5)
- ELT 12 - I can recognize/determine reflection, rotation, translational symmetry. (G-CO.A.3)
- ELT 13 - I can establish theorems/properties about parallelograms (rhombus, square, rectangle). ([G.CO.C.11](#))
- ELT 14 - I can determine if figures are similar (sequence of transformations, zoom factor, equivalent ratios). (G.SRT.A.2)
- ELT 15 - I can record geometric properties and theorems using conditional statements and their converses. (Prerequisite - supporting standard)
- ELT 16 - I can establish the formula for the area of a sector. (G.C.B.5)
- SS 1 - I can establish facts about theorems on polygons. (G-CO.C.11)
- SS 2 - I can prove properties of angles for a quadrilateral inscribed in a circle. (G.C.A.3)

Students will be able to recognize and apply triangle tools (right & non-right) to find angle measures and side lengths of objects and situations that can be modeled by triangles.

Promise Standards

- 3A - I can use and apply the Pythagorean Theorem and Pythagorean Triples when applicable. (7.G.A.2)
- 3B - I can solve right triangles in applied problems (trig ratios/Pythagorean Theorem). (G.SRT.C.8)
- 3C - I can apply the use of non-right triangles tools to solve problems. (G.SRT.D.10, G.SRT.D.11)

Essential Learning Targets

- ELT 1 - I can recognize and apply the triangle inequality theorem in context. (Prerequisite - 7.G.A.2)
- ELT 2 - I can prove and apply the Pythagorean Theorem in right triangles. (Prerequisite - 8.6.B.6, 8.6.B.7)
- ELT 3 - I can apply Pythagorean Theorem (distance formula) to find the distance between 2 coordinate points. (Prerequisite - 8.G.B.8)
- ELT 4 - I can use Pythagorean Theorem to solve right triangles in applied problems.
- ELT 5 - I can use Trigonometric ratios to solve right triangles in general (prerequisite) and in applied problems. (G-SRT.C8)
- ELT 6 - I can use similarity to define the right triangle trigonometric functions. (G-SRT.C.6)
- ELT 8 - I can determine a missing angle using trig ratios (inverse trig/non-right triangle tools). (G.SRT.C.8)
- ELT 9 - I can recognize the special right triangle and pythagorean triple shortcuts for right triangles. (G.SRT.C.8)
- ELT 10 - I can apply the Law of Sines to find unknown measurements in triangles. (G-SRT.D.11, G.SRT.D.10)
- ELT 11 - I can apply the Law of Cosines to find unknown measurements in triangles. (G-SRT.D.11, G.SRT.D.10)
- ELT 12 - I can apply the use of triangle tools to find unknown in application problems. ELT 12 - I can apply the use of triangle tools to find unknown in application problems.
- SS 1 - I can explain and use the relationship between the sine and cosine of complementary angles. (G-SRT.C7)

NPSP Middle & High School Curriculum

Students will be able to determine and utilize geometric properties and theorems in all contexts.

Promise Standards

- 4A - I can write/solve linear equations/inequalities with real number coefficients to calculate geometric properties. (Prerequisite)
- 4B - I can use characteristics of similar/congruent figures to find measurements. (G.SRT.B.5)
- 4C - I can make sense of measurements involving circles. (G.C.A.2)
- 4D - I can find the various angles of a regular polygon. (Prerequisite)
- 4E - I can find the perimeter, area, and volume of simple/complex shapes in context. (6.G.A.1)
- 4F - I can understand and apply the concept of volume of solid figures. (Prerequisite, 5.MD.C.3)

Essential Learning Targets

- ELT 1 - I can apply relationships among inscribed angles (diameter/right angle). (G-C.A.2)
- ELT 3 - I can apply relationships among radii and chords (G-C.A.2)
- ELT 4 - I can find the volume of prisms and cylinders. (G-GMD.1)
- ELT 5 - I can use coordinates to find distances and areas. (G-GPE.7)
- ELT 6 - I can find the area/perimeter of basic/complex shapes. (Prerequisite, 6.G.A.1)
- ELT 7 - I can determine the height of a figure. (Prerequisite - 6.G.A.1)
- ELT 8 - I can find missing lengths or scale factor (vice versa) for a given figure(s). (G.SRT.A.1b)
- ELT 9 - I can use triangle congruence and similarity properties to solve problems and prove relationships in geometric figures. (G.SRT.B.5)
- ELT 10 - I can use geometric shapes, their measures, and their properties to describe objects. ([G.MG.A.1](#))
- ELT 11 - I can apply geometric methods to solve design problems. ([G.MG.A.3](#))
- ELT 12 - I can use coordinates to compute perimeter and area of basic shapes on a coordinate plane. (G.GPE.B.7)
- ELT 13 - I can find a point on a line segment between 2 given points that divides the segment proportionally. (G.GPE.B.6)
- ELT 14 - I can establish relationships regarding tangent and secant lines within circles. (G.C.A.2)
- ELT 15 - I can use the Regular Polygon Angle Web to determine missing measurements. (prerequisite)
- ELT 16 - I understand that volume is in cubic units. (prerequisite, 5.MD.C.3, [5.MD.C.4](#))
- ELT 17 - I can apply formulas for the volume and surface area of a prisms. (prerequisite, [5.MD.C.5](#))
- SS 1 - I can use volume and surface area formulas for cylinders, pyramids, cones, and spheres to solve problems. (G.GMD.A.3)