

RL Reasoning and Logic

Skills:

RL1 I can distinguish objects by constructing and using formal definitions.

RL2 I can propose conjectures using inductive reasoning.

RL3 I can draw conclusions using deductive reasoning.

RL4 I can find inverse, converse and contrapositive statements.

RL5 I can use counterexamples to disprove logical statements.

RL6 I can examine logical arguments and assess their validity.

Standards:

G.RL.1.1 Understand the use of undefined terms, definitions, postulates, and theorems in logical arguments/proofs.

G.RL.1.2 Analyze and draw conclusions based on a set of conditions using inductive and deductive reasoning. Recognize the logical relationships between a conditional statement and its inverse, converse, and contrapositive.

G.RL.1.3 Assess the validity of a logical argument and give counterexamples to disprove a statement.

LA Lines and Angles

Skills:

- LA1 I can identify and model points, lines and planes.
- LA2 I can add and subtract lengths or angles, and calculate unknown measures.
- LA3 I can use theorems involving parallel lines to find angle measures.
- LA4 I can determine if lines are parallel by constructing a formal proof.
- LA5 I can solve problems using parallel and perpendicular lines.

Standards:

- G.2D.1.1** Apply the properties of parallel and perpendicular lines, including properties of angles formed by a transversal, to solve real-world and mathematical problems and determine if two lines are parallel, using algebraic reasoning and proofs.
- G.2D.1.2** Apply the properties of angles, including corresponding, exterior, interior, vertical, complementary, and supplementary angles to solve real-world and mathematical problems using algebraic reasoning and proofs.

TR Triangles

Skills:

TR1 I can solve problems involving triangle interior and exterior angles.

TR2 I can solve problems using triangle congruence and similarity.

TR3 I can construct logical arguments to prove triangle congruence.

TR4 I can construct logical arguments to prove triangle similarity.

Standards:

G.2D.1.3 Apply theorems involving the interior and exterior angle sums of polygons and use them to solve real-world and mathematical problems using algebraic reasoning and proofs.

G.2D.1.7 Apply the properties of congruent or similar polygons to solve real-world and mathematical problems using algebraic and logical reasoning.

G.2D.1.8 Construct logical arguments to prove triangle congruence (SSS, SAS, ASA, AAS and HL) and triangle similarity (AA, SSS, SAS).

RT Right Triangles and Trigonometry

Skills:

- RT1 I can determine if triangles are right using the Pythagorean Theorem.
- RT2 I can find unknown lengths and distances using the Pythagorean Theorem.
- RT3 I can recall the ratios in 45-45-90 and 30-60-90 triangles and use them to solve problems.
- RT4 I can identify the sides of right triangles (opposite, adjacent and hypotenuse) and use these to find trigonometric ratios.
- RT5 I can find unknown lengths in right triangles using trigonometric ratios.
- RT6 I can find unknown angles in right triangles using trigonometric ratios.
- RT7 I can solve problems by constructing and using a relevant right triangle.

Standards:

- G.RT.1.1** Apply the distance formula and the Pythagorean Theorem and its converse to solve real-world and mathematical problems, as approximate and exact values, using algebraic and logical reasoning (include Pythagorean Triples).
- G.RT.1.2** Verify and apply properties of right triangles, including properties of 45-45-90 and 30-60-90 triangles, to solve problems using algebraic and logical reasoning.
- G.RT.1.3** Use the definition of the trigonometric functions to determine the sine, cosine, and tangent ratio of an acute angle in a right triangle. Apply the inverse trigonometric functions as ratios to find the measure of an acute angle in right triangles.
- G.RT.1.4** Apply the trigonometric functions as ratios (sine, cosine, and tangent) to find side lengths in right triangles in real-world and mathematical problems.

PG Polygons

Skills:

- PG1 I can find angles in polygons using the interior and exterior angle sum theorems.
- PG2 I can identify special quadrilaterals using their definitions.
- PG3 I can prove the properties of parallelograms and rhombuses.
- PG4 I can prove the properties of rectangles, trapezoids and kites.
- PG5 I can solve problems using the perimeter of polygons.
- PG6 I can solve problems using the area of polygons.
- PG7 I can solve problems using polygon congruence and similarity.

Standards:

- G.2D.1.3** Apply theorems involving the interior and exterior angle sums of polygons and use them to solve real-world and mathematical problems using algebraic reasoning and proofs.
- G.2D.1.4** Apply the properties of special quadrilaterals (square, rectangle, trapezoid, isosceles trapezoid, rhombus, kite, parallelogram) and use them to solve real-world and mathematical problems involving angle measures and segment lengths using algebraic reasoning and proofs.
- G.2D.1.6** Apply the properties of polygons to solve real-world and mathematical problems involving perimeter and area (e.g., triangles, special quadrilaterals, regular polygons up to 12 sides, composite figures).
- G.2D.1.7** Apply the properties of congruent or similar polygons to solve real-world and mathematical problems using algebraic and logical reasoning.

CI Circles

Skills:

- CI1 I can solve problems involving the circumference of a circle and the length of an arc.
- CI2 I can solve problems involving the areas of circles and sectors.
- CI3 I can prove statements involving circles and tangents.
- CI4 I can prove statements involving chords and arcs.
- CI5 I can prove statements involving inscribed angles.
- CI6 I can prove statements involving secants.

Standards:

- G.C.1.1** Apply the properties of circles to solve problems involving circumference and area, approximate values and in terms of π , using algebraic and logical reasoning.
- G.C.1.2** Apply the properties of circles and relationships among angles; arcs; and distances in a circle among radii, chords, secants and tangents to solve problems using algebraic and logical reasoning.

CG Coordinate Geometry

Skills:

- CG1 I can plot ordered pairs and linear equations on the Cartesian plane.
- CG2 I can find lengths, midpoints and slopes of line segments on a coordinate plane.
- CG3 I can describe and analyze polygons using coordinates.
- CG4 I can use geometric formulas to develop and prove the equation of a circle.
- CG5 I can represent circles graphically, numerically and algebraically.

Standards:

- G.2D.1.5** Use coordinate geometry to represent and analyze line segments and polygons, including determining lengths, midpoints, and slopes of line segments.
- G.C.1.3** Recognize and write the radius r , center (h, k) , and standard form of the equation of a circle $(x - h)^2 + (y - k)^2 = r^2$ with and without graphs.
- G.C.1.4** Apply the distance and midpoint formula, where appropriate, to develop the equation of a circle in standard form.

TN Transformations

Skills:

- TN1 I can describe reflections and dilations using numeric, graphic and algebraic representations.
- TN2 I can describe translations using numeric, graphic and algebraic representations.
- TN3 I can describe rotations using numeric, graphic and algebraic representations.
- TN4 I can identify different types of symmetry.

Standards:

- G.2D.1.9** Use numeric, graphic and algebraic representations of transformations in two dimensions, such as reflections, translations, dilations, and rotations about the origin by multiples of 90° , to solve problems involving figures on a coordinate plane and identify types of symmetry.

TD Three-Dimensional Shapes

Skills:

- TD1 I can create nets for three-dimensional shapes and solve problems using surface area.
- TD2 I can solve problems using the volume of three-dimensional shapes.
- TD3 I can make conjectures about the ratios of measurements of similar three-dimensional figures.
- TD4 I can solve for unknown values using the properties of similar three-dimensional figures.

Standards:

- G.3D.1.1** Solve real-world and mathematical problems using the surface area and volume of prisms, cylinders, pyramids, cones, spheres, and composites of these figures. Use nets, measuring devices, or formulas as appropriate.
- G.3D.1.2** Use ratios derived from similar three-dimensional figures to make conjectures, generalize, and to solve for unknown values such as angles, side lengths, perimeter or circumference of a face, area of a face, and volume.