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**Coal City Unit District #1**  
**Geometry**  
**Math Curriculum**

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**MA.G:1 Students will demonstrate an understanding of the concepts of points, lines, and planes and their relationship to definitions and vocabulary. (G.CO.1)**

MA.G:1-1 Define basic geometry terms (e.g. intersect, bisect, collinear, theorem, complementary, angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc)

MA.G:1-2 Identify geometric terms and concepts from a diagram (e.g. intersects, collinear, linear pairs)

MA.G:1-3 Identify algebraic and geometric properties and use them to justify statements. (i.e. reflexive, symmetric, transitive)

**MA.G:2 Students will demonstrate understanding of congruence in terms of rigid motions. (GCO6, GCO7, GCO8)**

MA.G:2-1 Determine if triangles are congruent using SSS, SAS, ASA, AAS, HL.

MA.G:2-2 Use corresponding parts of congruent triangles (CPCTC) to determine if segments and angles are congruent.

**MA.G:3 Students will prove geometric theorems. (CGO9, GCO10, GCO11)**

MA.G:3-1 Make conclusions using conjectures, patterns, conditional, converse, inverse, contrapositive statements and given information.

MA.G:3-2 Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angle are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.

MA.G:3-3 Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the properties of medians, altitudes, angle bisectors, and perpendicular bisectors.

MA.G:3-4 Prove theorems about parallelograms. Theorems include; opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.

**MA.G:4 Students will demonstrate understanding of similarity. (GSRT2, GSRT3, GSRT4, GSRT5)**

- MA.G:4-1 Use proportions to solve problems. (e.g. find the measures of angles, lengths of figures, scale models)
- MA.G:4-2 Determine if triangles are similar using AA, SSS, or SAS similarity.
- MA.G:4-3 Use the properties of similar triangles to find lengths of segments and measure angles.
- MA.G:4-4 Solve problems involving similar triangles formed by the altitude drawn to the hypotenuse of a right triangle.
- MA.G:4-5 Calculate the area or volume of similar figures given the scale factor and an area or volume of a figure.

**MA.G:5 Students will calculate unknown measurements of figures using geometric properties.**

- MA.G:5-1 Find missing measurements using geometric postulates or theorems (e.g. segment addition postulate, angle addition postulate)
- MA.G:5-2 Identify and use the properties of triangles to find measures of angles and lengths of segments (e.g. isosceles triangles, medians, altitudes, angle bisectors, perpendicular, bisectors).
- MA.G:5-3 Identify and use the properties of special quadrilaterals to find measures of angles and lengths of segments.
- MA.G:5-4 Find measures of angles formed by a transversal intersecting parallel lines.
- MA.G:5-5 Use properties of polygons to find measures of interior or exterior angles given the number of sides and vice-versa.
- MA.G:5-6 Use angle measures of a triangle to determine which side of the triangle is shortest or longest and vice versa.

**MA.G:6 Students will apply trigonometry to general triangles and solve problems involving right triangles. (GSRT6, GSRT7, GSRT8)**

- MA.G:6-1 Find the lengths of sides of 30-60-90 and 45-45-90 triangles.
- MA.G:6-2 Use trigonometric ratios to solve triangles including real world situations with angle of elevation and depression.
- MA.G:6-3 Use the Converse of the Pythagorean Theorem to classify triangles.

**MA.G:7 Students will demonstrate understanding and apply theorems about circles. (GC2, GC4, GC5, GPE1)**

- MA.G:7-1 Identify relationships among inscribed angles, radii, chords, secants, and tangents and find missing measurements.
- MA.G:7-2 Find arc lengths, lengths of segments in circles, and areas of sectors of circles.
- MA.G:7-3 Identify the coordinates of the center of a circle given the equation

of the circle. Write the equation of a circle given the center and radius.

**MA.G:8 Students will use coordinates to prove simple geometric theorems algebraically. (GPE4, GPE6, GPE7)**

MA.G:8-1 Use the distance formula to calculate the distance between two given points.

MA.G:8-2 Calculate the midpoint between two given points.

MA.G:8-3 Use coordinates to compute perimeters of polygons, areas of triangles and quadrilaterals, and classify a triangle when given the coordinates of the vertices.

**MA.G:9 Students will use area and volume formulas to solve problems. (GMD1, GMD3)**

MA.G:9-1 Find the area of regular polygons.

MA.G:9-2 Use volume and surface area formulas for cylinders, pyramids, cones, and spheres to solve problems given a real world context.