**Geometry**

**BIG IDEA: Spatial relationships can be described, measured and compared\***

Aspect emphasize in each grade:

Grade 5 - Closed shapes have area and perimeter.

Grade 6 - Volume and angles are measurable properties of objects and shapes.

Grade 7 - The ratio between the circumference and diameter of circles is constant.

Grade 8 - Similar shapes and objects have predictable relationships.

Grade 9 - Right triangles attributes can be described using Trigonometric ratios & the Pythagorean Theorem

**Mathematic Competencies**

Analyzing a problem

* Use multiple strategies to develop, construct, and apply mathematical understanding through problem solving
* Estimate the reasonableness of decimal and fraction calculations
* Develop and apply mental math strategies to determine decimal and fraction calculations, deepen understanding, and reinforce whole number computational fluency

Reasoning and proof

* Inductively and deductively reason.
* Use logic to explore, make connections, predict, analyze, generalize, and make conclusions

Communicating

* Communicate concretely, pictorially, symbolically, and using spoken and written language to express, describe, explain, represent, clarify, modify, reinforce, apply, defend and extend mathematical ideas

Connecting

* Visualize and describe mathematical concepts
* Connect mathematical concepts to each other and to the “real” world

Representing

* Develop mathematical understanding through concrete, pictorial, and symbolic representations
* Use technology appropriately to explore and create patterns, examine relationships, test conjectures, solve problems, record, communicate and represent thinking

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| **I can use direct and indirect measurement to solve problems.** | |
| 6 A D R M | I can demonstrate an understanding of angles by:   * Identifying examples of angles in my environment * Classifying angles according to their measure * Estimating the measure of angles using 45°, 90°, and 180° as reference angles * Use a protractor to measure and draw angles. |
| 6 A D R M | I can show that I understand that the sum of interior angles is:   * 180° in a triangle * 360° in a quadrilateral |
| 6 A D R M | I can develop and apply a formula for determining:   * the perimeter of polygons * the area of rectangles * volume of right rectangular prisms |
| 7 A D R M | I can demonstrate an understanding of circles by:   * describing the relationships among radius, diameter and circumference * relating circumference to pi * determining the sum of central angles * constructing circles with a given radius or diameter * solving problems involving radii, diameters, and circumference of circles |
| 7 A D R M | I can develop and apply a formula for determining the area of:   * triangles * parallelograms * circles |
| **I can describe the characteristics of 3-D objects and 2-D shapes and analyze the relationships among them.** | |
| 6 A D R M | I can construct and compare triangles (scalene, isosceles, equilateral, right, obtuse, acute) in different orientations. |
| 6 A D R M | I can describe and compare the sides and angles of regular and irregular polygons. |
| 7 A D R M | I can perform geometric constructions including:   * perpendicular line segments * parallel line segments * perpendicular bisectors * angle bisectors |
| **I can describe the position and motion of objects and shapes.** | |
| 6 A D R M | I can perform a combination of translations, rotations, and reflections on a single 2-D shape and then draw and describe the resulting image. |
| 6 A D R M | I can create tessellations by performing a combination of successive transformations of 2-D shapes. |
| 6 A D R M | I can identify and plot points in the first quadrant of the Cartesian plane using whole number ordered pairs. |
| 6 A D R M | I can perform and describe single transformations of a 2-D shape in the first quadrant of the Cartesian plane (limited to whole number vertices) |
| 7 A D R M | I can identify and plot points in the four quadrants of a Cartesian plane using integral ordered pairs. |
| 7 A D R M | I can perform and describe single transformations of a 2-D shape in all four quadrants of a Cartesian plane (limited to integral number vertices) |