Oklahoma Geometry with CORD Geometry, 2nd Edition

Priority Academic Student Skills

MATHEMATICS CONTENT STANDARDS

Geometry

The following skills are required of all students completing Geometry. **Major Concepts** should be taught in depth using a variety of methods and applications (concrete to the abstract) **Maintenance Concepts** have been taught previously and are a necessary foundation for this course. The major concepts are considered minimal exit skills and districts are strongly encouraged to exceed these skills when building a Geometry curriculum. Visual and physical models, calculators, and other technologies are recommended when appropriate and can enhance both instruction and assessment.

MAJOR CONCEPTS	MAINTENANCE CONCEPTS
Logical Reasoning	Ratios, Proportions
Properties	Slope
Coordinate Geometry	Equations
Angles and Triangles	Formulas
Data Analysis, Statistics, and Probability	Perimeter, Area, Surface Area, Volume

Standard 1: Logical Reasoning - The student will use deductive and inductive reasoning to solve problems.

1. Properties and Relationships of Figures
   a. Identify the relationships of parallel lines with a transversal.

      Pages or Location: 33-34, 148-154, 155-161, 184-186, 186-187, 192, 193, 196, 198, 199, 200, 212, 214, 220-221, 223, 230, 273-278, 284, 497-499, 563, 680

   b. Identify relationships between pairs of angles (e.g., adjacent, complementary, vertical).

      Pages or Location: 23-24, 26-29, 35, 43, 64, 73, 75-76, 130-131, 148-153, 217, 261, 347, 551

2. Determine and use the relationships of congruency and similarity to determine unknown values.

   Pages or Location: 243, 245, 252, 302, 318, 316-322, 323-330, 331-334, 335-340, 348-353, 354-360, 361-366, 367-369, 371-372, 373-387, 487-491, 512, 524, 541, 603, 617, 618, 641, 718-720

3. Use logical reasoning skills (inductive and deductive) to make and test conjectures, formulate counter examples, follow logical arguments, judge the validity of arguments and construct simple valid arguments.

   Pages or Location: 23, 24, 32-34, 44-45,68-73, 74-79, 80-84, 85-88, 105, 115-121, 122, 127, 129, 130-132, 136, 137, 149, 154, 157, 161, 163-164, 172, 179, 230, 231, 235, 236, 239-241, 262, 263, 265, 279, 281,

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287, 291-292, 318, 319, 323-325, 340, 341, 349, 353, 354, 366, 415, 427, 469, 583, 525, 528, 542-544, 551, 553, 557, 558, 605, 606, 618, 638, 699, 700, 708

Standard 2: Properties of 2- and 3-Dimensional Figures - The student will use the properties and formulas of geometric figures to solve problems.

1. Polygons

   a. Identify and describe polygons (i.e., convex, concave, regular)

      Pages or Location: 255-261, 264, 265, 268, 299, 300, 301, 360, 420, 477-480, 513, 514

   b. Apply the interior and exterior angle sum of convex polygons to solve problems.

      Pages or Location: 262-268, 269-272, 291-292, 297, 299-300, 304, 330, 340, 360, 420, 476, 529, 680

   c. Develop and apply the properties of quadrilaterals to solve problems (e.g., rectangles, parallelograms, rhombi, trapezoids, kites).

      Pages or Location: 268-272, 273-278, 279-284, 285-290, 293-294, 294-296, 297-307, 322, 604

2. Draw and analyze 2- and 3-dimensional figures.

   Pages or Location: Many of the activities in the lessons require students to draw or construct a two- or three-dimensional drawing as they interact with the text to discover how a concept works. Also, pages 582-588, 589-595

3. Use properties of 2- and 3-dimensional figures to determine unknown values (e.g., given the perimeter/circumference, find the area).

   Pages or Location: 77, 162-170, 171-178, 179-183, 192, 198, 200, 210, 224-230, 252, 261, 264, 266-267, 274-275, 277, 284, 288-289, 322, 335-340, 341-347, 458-464, 465-470, 471-476, 477-480, 481-486, 487-491, 504-515, 582-588, 589-595, 596-604, 605-611, 612-618, 619-625, 626-631

4. Compute length, perimeter or circumference, area, volume, and surface area of geometric figures with missing information and correctly identify the appropriate unit of measure of each.

   Pages or Location: 256-261, 289, 310, 318, 321, 328, 330, 352, 458-464, 465-470, 471-476, 477-480, 481-486, 487-491, 493-494, 504-515, 528, 573, 582-588, 589-595, 596-604, 605-611, 612-618, 619-625, 626-631, 632-636, 650-662, 673, 680, 693, 697, 711

*5. Use geometric tools (e.g., protractor, compass, straight edge) to construct a variety of figures.

   Pages or Location: 36-43, 48-50, 53, 55, 59, 61, 64, 65, 68-69, 73, 94, 109, 147, 155, 178, 207, 211, 223, 231, 234, 235, 237-238, 249, 267, 278, 281, 285, 286, 319, 320, 323-325, 327, 335, 343, 428, 531, 536, 546, 558, 571, 669, 704

6. Find angle measures and arc measures related to circles.

   Pages or Location: 533-541, 542-549, 550-556, 565-567, 567-570, 571-579, 618, 625, 697

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7. Chords, Secants and Tangents

   a. Identify and describe the relationship between two chords that intersect in the interior of a circle.

      Pages or Location: 550-551, 567-570, 578, 579, 625

   b. Identify and describe the relationship between two secants that intersect in the exterior of a circle.

      Pages or Location: 552-556, 578, 673

   c. Identify and describe the relationship between a secant and a tangent that intersect in the exterior of a circle.

      Pages or Location: 552-556, 618, 625, 673

Standard 3: Coordinate Geometry - The student will solve problems with geometric figures in the coordinate plane.

1. Use transformations (reflection, rotation, translation) within coordinate geometry (e.g., reflect points across the y-axis).

   Pages or Location: 698-704, 708-711

2. Use coordinate geometry to find the distance between two points; the midpoint of a segment; and to calculate the slopes of parallel, perpendicular, horizontal, and vertical lines.

   Pages or Location:

   12-18, 73, 102, 141-143, 146, 190-191, 217, 340, 390-396, 397-404, 405-412, 421-428, 429-437, 441-443, 444-455, 469, 506, 549, 563, 631, 636

3. Given a set of points determine the type of figure based on its properties (e.g., parallelogram, isosceles triangle, regular octagon).

   Pages or Location: 298, 424-425, 426, 428, 453, 455, 461, 463, 506, 618, 636, 671

Standard 4: Angles, Triangles and Similar Polygons - The student will use the properties of angles, right triangles and similar polygons to solve problems.

1. Solve problems using properties of angles (e.g., interior, exterior, complementary, vertical, angle sums, 30-60-90).

   Pages or Location: 23-24, 26-29, 30-35, 65, 88, 103-109, 110-114, 152, 154, 161, 162-170, 192, 198, 199, 210, 217, 223, 225, 252, 262-267, 277, 284, 290, 291-292, 322, 347, 348-353, 354-360, 361-366, 386, 529, 532, 533-535, 542-549, 550-556, 571, 576, 577, 578, 588, 604, 611, 631, 680, 711, 718-720

2. Use the Pythagorean Theorem and its converse to find missing side lengths and to determine acute, right, and obtuse triangles.

   Pages or Location: 341-347, 360, 369-371, 376, 378, 381, 385-387, 391, 407, 411, 473, 474, 504, 512, 537, 545, 576, 631, 653, 656

3. Apply the 45-45-90 and 30-60-90 right triangle relationships to solve problems.

   Pages or Location: 348-353, 369-371, 376, 377, 383, 385, 387, 396, 448, 451, 478, 505, 532, 577, 711

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4. Express the trigonometric functions as ratios and derive the relationship between sine, cosine, and tangent ratios, and use to solve real-world problems.

   Pages or Location: 354-360, 361-366, 375, 380, 384, 491, 496, 718-720

5. Similar Polygons

   a. Use similar figures to construct ratios and solve for a missing side.

      Pages or Location: 312-315, 316-322, 323-330, 331-334, 335-340, 347, 351, 359, 360, 365, 367-369, 375, 377, 383, 384, 386, 387, 420, 464, 470, 487-491, 512, 524, 617, 625, 718-720

   b. Use ratios of similar figures to find linear distance, perimeter, area, and volume.

      Pages or Location: 312-315, 316-322, 323-330, 331-334, 335-340, 347, 351, 359, 360, 365, 367-369, 375, 377, 383, 384, 386, 387, 420, 464, 470, 487-491, 512, 524, 603, 617, 618, 625, 632-636, 641, 662, 718-720