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**Geometry**

**Observation for Continued Assessment and End of the Year Evaluation**

This document is designed to assist in monitoring an individual student’s progress throughout the course. The 2009 Mathematics Virginia Standards of Learning Curriculum Framework establishes the foundation for the knowledge and skills each student should acquire.

Seven spaces are provided by each skill within this document for recording a student’s proficiency level (score of 4, 3, 2, or 1). The Comments section, after each reporting category, allows the teacher to provide specific information on observations, areas of strength, areas needing additional instruction, and a suggested plan for increasing student performance.

Student work, conversations with the student and observations provide evidence for the evaluation of performance. Evaluations are based on the student’s ability to explain, model, and apply learning.

This document is a fillable Word document. Complete the information on page 1 (below) and then click File, Save As the student's last name first initial and grade level. When entering a student's proficiency score on the appropriate line next to an SOL, click on the line and type the appropriate score number. When adding additional scores throughout the year/course, simply click onto the subsequent line and type the score number (tabbing or adding a space is not needed). Successive changes require a File, Save to ensure updates are properly recorded.

Student Name:

ID #:

School:

Teacher:

School Year:

**Modified and created by Dr. Dan Mulligan**

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**Scoring Rubric - Proficiency Levels**

* exhibits minimal performance
* shows very limited evidence of conceptual understanding and use of strategies
* responds with inappropriate answer and/or procedure frequently
* very often displays misunderstandings
* completes task appropriately and accurately infrequently
* needs assistance, guidance and modified instruction

Limited Proficiency (1)

* exhibits inconsistent performance and misunderstandings at times
* shows some evidence of conceptual understanding
* has difficulty applying strategies or completing tasks in unfamiliar situations
* responds with appropriate answer or procedure sometimes
* requires teacher guidance frequently
* needs additional time, opportunities
* demonstrates some proficient competencies but is inconsistent

Not Yet Proficient (2)

* exhibits consistent performance
* shows conceptual understanding
* applies strategies in most situations
* responds with appropriate answer or procedure
* completes task accurately; needs minimal assistance
* exhibits fluency and applies learning
* shows some flexibility in thinking
* works in confidence
* recognizes cause and effect relationships; applies models, and explains concepts

Proficient (3)

* consistent performance beyond grade level
* works independently; shows confidence and initiative
* understands advanced concepts
* applies strategies creatively
* analyzes and synthesizes
* justifies and elaborates responses
* makes critical judgments
* makes application and extensions beyond grade level; exceeds Proficient competencies in more challenging situations

Exceeds Expected Proficiency (4)

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| **Reasoning, Lines, and Transformations** |
|  | **G.1 Overall Score** |
|                                                 | a. Identify the converse, inverse, and contrapositive of a conditional statement |
|                                                 | b. Translate verbal arguments into symbolic form, such as ($p$ $\rightarrow $ $q$) and ($\~p\rightarrow \~q$) |
|                                                 | c. Determine the validity of a logical argument |
|                                                 | d. Use valid forms of deductive reasoning, including the law of syllogism, the law of the contrapositive, the law of detachment, and counterexamples |
|                                                 | e. Select and use various types of reasoning and methods of proof, as appropriate |
|                                                 | f. Use Venn diagrams to represent set relationships, such as intersection and union |
|                                                 | g. Interpret Venn diagrams |
|                                                 | h. Recognize and use the symbols of formal logic, which include →, ↔, ~, ∴, $∧$, and $∨$ |
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|  | **G.2 Overall Score** |
|                                                 | a. Use algebraic and coordinate methods as well as deductive proofs to verify whether two lines are parallel |
|                                                 | b. Solve problems by using the relationships between pairs of angles formed by the intersection of two parallel lines and a transversal including corresponding angles, alternate interior angles, alternate exterior angles, and same-side (consecutive) interior angles |
|                                                 | c. Solve real-world problems involving intersecting and parallel lines in a plane |
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|  | **G.3 Overall Score** |
|                                                 | a. Find the coordinates of the midpoint of a segment, using the midpoint formula |
|                                                 | b. Use a formula to find the slope of a line |
|                                                 | c. Compare the slopes to determine whether two lines are parallel, perpendicular, or neither |
|                                                 | d. Determine whether a figure has point symmetry, line symmetry, both or neither |
|                                                 | e. Given an image and preimage, identify the transformation that has taken place as a reflection, rotation, dilation, or translation |
|                                                 | f. Apply the distance formula to find the length of a line segment when given the coordinates of the endpoints |

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|  | **G.4 Overall Score** |
|  | a. Construct and justify the constructions of |
|                                                 | 1. a line segment congruent to given line segment |
|                                                 | 2. the perpendicular bisector of a line segment |
|                                                 | 3. a perpendicular to a given line from a point not on the line |
|                                                 | 4. a perpendicular to a given line at a point on the line |
|                                                 | 5. the bisector of a given angle |
|                                                 | 6. an angle congruent to a given angle |
|                                                 | 7. a line parallel to a given line through a point not on the given line |
|                                                 | b. Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle |
|                                                 | c. Construct the inscribed and circumscribed circles of a triangle |
|                                                 | d. Construct a tangent line from a point outside a given circle to the circle |
| Comments |

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| **Triangles** |
|  | **G.5 Overall Score** |
|                                                 | a. Order the sides of a triangle by their lengths when given the measures of the angles |
|                                                 | b. Order the angles of a triangle by their measures when given the lengths of the sides |
|                                                 | c. Given the lengths of three segments, determine whether a triangle could be formed |
|                                                 | d. Given the lengths of two sides of a triangle, determine the range in which the length of the third side must lie |
|                                                 | e. Solve real-world problems given information about the lengths of sides and/or measures of angles in triangles |
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|  | **G.6 Overall Score** |
|                                                 | a. Use definitions, postulates, and theorems to prove triangles congruent |
|                                                 | b. Use coordinate methods, such as the distance formula and the slope formula, to prove two triangles are congruent |
|                                                 | c. Use algebraic methods to prove two triangles are congruent |
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|  | **G.7 Overall Score** |
|                                                 | a. Use definitions, postulates, and theorems to prove triangles similar |
|                                                 | b. Use algebraic methods to prove that triangles are similar |
|                                                 | c. Use coordinate methods, such as the distance formula, to prove two triangles are similar |
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|  | **G.8 Overall Score** |
|                                                 | a. Determine whether a triangle formed with three given lengths is a right triangle |
|                                                 | b. Solve for missing lengths in geometric figures, using properties of 45°-45°-90° triangles |
|                                                 | c. Solve for missing lengths in geometric figures, using properties of 30°-60°-90° triangles |
|                                                 | d. Solve problems involving right triangles, using sine, cosine, and tangent ratios |
|                                                 | e. Solve real-world problems, using right triangle trigonometry and properties of right triangles  |
|                                                 | f. Explain and use the relationship between the sine and cosine of complementary angles  |

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| Comments |

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| **Polygons and Circles** |
|  | **G.9 Overall Score** |
|                                                 | a. Solve problems, including real-world problems, using the properties specific to parallelograms, rectangles, rhombi, squares, isosceles trapezoids, and trapezoids |
|                                                 | b. Prove that quadrilaterals have specific properties, using coordinate and algebraic methods, such as the distance formula, slope, and midpoint formula |
|                                                 | c. Prove the characteristics of quadrilaterals, using deductive reasoning, algebraic, and coordinate methods |
|                                                 | d. Prove properties of angles for a quadrilateral inscribed in a circle |
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|  | **G.10 Overall Score** |
|                                                 | a. Solve real-world problems involving the measures of interior and exterior angles of polygons |
|                                                 | b. Identify tessellations in art, construction, and nature |
|                                                 | c. Find the sum of the measures of the interior and exterior angles of a convex polygon |
|                                                 | d. Find the measure of each interior and exterior angle of a regular polygon |
|                                                 | e. Find the number of sides of a regular polygon, given the measures of interior or exterior angles of the polygon |
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|  | **G.11 Overall Score** |
|  | a. Find lengths, angle measures, and arc measures associated with  |
|                                                 | 1. two intersecting chords |
|                                                 | 2. two intersecting secants |
|                                                 | 3. an intersecting secant and tangent |
|                                                 | 4. two intersecting tangents |
|                                                 | 5. central and inscribed angles |
|                                                 | b. Calculate the area of a sector and the length of an arc of a circle, using proportions  |
|                                                 | c. Solve real-world problems associated with circles, using properties of angles, lines, and arcs  |
|                                                 | d. Verify properties of circles, using deductive reasoning, algebraic, and coordinate methods  |
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|  | **G.12 Overall Score** |
|                                                 | a. Identify the center, radius, and diameter of a circle from a given standard equation  |
|                                                 | b. Use the distance formula to find the radius of a circle  |
|                                                 | c. Given the coordinates of the center and radius of the circle, identify a point on the circle  |
|                                                 | d. Given the equation of a circle in standard form, identify the coordinates of the center and find the radius of the circle  |
|                                                 | e. Given the coordinates of the endpoints of a diameter, find the equation of the circle  |
|                                                 | f. Given the coordinates of the center and a point on the circle, find the equation of the circle  |
|                                                 | g. Recognize that the equation of a circle of given center and radius is derived using the Pythagorean Theorem  |
| Comments | 1. the perpendicular bisector of a line segment; |

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| **Three-Dimensional Figures** |
|  | **G.13 Overall Score** |
|                                                 | a. Find the total surface area of cylinders, prisms, pyramids, cones and spheres, using the appropriate formulas |
|                                                 | b. Calculate the volume of cylinders, prisms, pyramids, cones, and spheres, using the appropriate formulas |
|                                                 | c. Solve problems, including real-world problems, involving total surface area and volume of cylinders, prisms, pyramids, cones, and spheres as well as combinations of three-dimensional figures |
|                                                 | d. Calculators may be used to find decimal approximations for results |
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|  | **G.14 Overall Score** |
|                                                 | a. Compare ratios between side lengths, perimeters, areas, and volumes, given two similar figures |
|                                                 | b. Describe how changes in one or more dimensions affect other derived measures (perimeter, area, total surface area, and volume) of an object |
|                                                 | c. Describe how changes in one or more measures (perimeter, area, total surface area, and volume) affect other measures of an object |
|                                                 | d. Solve real-world problems involving measured attributes of similar objects |
| Comments |