

Course Title & Number: MAT*H144 Math for Elem Ed: Geometry/Data

Competency Area: **QUANTITATIVE REASONING** (Goal: Students will learn to recognize, understand, and use the quantitative elements they encounter in various aspects of their lives. Students will develop a habit of mind that uses quantitative skills to solve problems and make informed decisions.)

Faculty submitting the Learning Outcomes: Jane Wampler, Harry Burt, Ruth Urbina-Lilback, Katie Lozo

Date: 3/7/13

[Instructions: Please match the Learning Outcomes in the left hand column to those of the course you are submitting for Gen Ed approval. List the corresponding course outcomes in the right hand column to indicate a match.]

BOR TAP's Learning Outcomes	Corresponding Outcomes for Course Named Above
1. Represent mathematical and quantitative information symbolically, graphically, numerically, and verbally.	<ol style="list-style-type: none">1. Interpret data represented by statistical graphs and tables, and create representations of statistical data.2. Define and demonstrate understanding of statistical terms<ul style="list-style-type: none">• Measures of central tendency (mean, median, mode)• Measures of spread (range, standard deviation)• Population, sample, random sample• Normal distribution
2. Apply quantitative methods to investigate routine and novel problems. This includes calculations/procedures, mathematical and/or statistical modeling, prediction, and evaluation.	<ol style="list-style-type: none">1. Interpret data represented by statistical graphs and tables, and create representations of statistical data.2. Define and demonstrate understanding of statistical terms<ul style="list-style-type: none">• Measures of central tendency (mean, median, mode)• Measures of spread (range, standard deviation)• Population, sample, random sample• Normal distribution3. Define empirical probability and theoretical probability; calculate theoretical probabilities (using ideas of counting, permutations, combinations, dependent/independent events, mutually exclusive/non-mutually exclusive events, complementary events)9. State and apply the Pythagorean Theorem and its converse.12. Compute areas, perimeters, surface areas and volumes.
3. Interpret mathematical and quantitative information and draw logical inferences from representations such as formulas, equations, graphs, tables, and schematics.	<ol style="list-style-type: none">1. Interpret data represented by statistical graphs and tables, and create representations of statistical data.2. Define and demonstrate understanding of statistical terms<ul style="list-style-type: none">• Measures of central tendency (mean, median, mode)• Measures of spread (range, standard deviation)• Population, sample, random sample

	<ul style="list-style-type: none"> • Normal distribution <p>3. Define empirical probability and theoretical probability; calculate theoretical probabilities (using ideas of counting, permutations, combinations, dependent/independent events, mutually exclusive/non-mutually exclusive events, complementary events)</p> <p>9. State and apply the Pythagorean Theorem and its converse.</p> <p>12. Compute areas, perimeters, surface areas and volumes.</p>
4. Evaluate the results obtained from quantitative methods for accuracy and/or reasonableness.	Evaluate the results obtained from quantitative methods for accuracy and/or reasonableness.
	<p><i>Additional Outcomes</i></p> <p>4. Describe/define, demonstrate understanding of geometric terms</p> <ul style="list-style-type: none"> • Undefined terms point, line, plane • Parallel and perpendicular lines • Line segment, endpoint, midpoint • Distance, length • Congruence • Angle, vertex, sides, measure, acute, right, obtuse, straight, supplementary, complementary • Polygon, including special polygons • Circle, interior and exterior of circle, chord, radius, diameter, tangent, secant <p>5. Accurately measure objects</p> <ul style="list-style-type: none"> • Use protractors to measure angles • Use standard and nonstandard units of measure to measure objects • Perform unit conversions <p>6. Explain the differences between and similarities among parallelograms, trapezoids, rectangles, rhombuses and squares.</p> <p>7. Define and demonstrate understanding of inductive and deductive reasoning, hypothesis and conclusion.</p> <p>8. Prove theorems</p> <ul style="list-style-type: none"> • Involving vertical angles and angle measure of polygons • Establishing congruence of triangles • Establishing similarity of triangles <p>10. Perform the basic constructions</p> <ul style="list-style-type: none"> • Bisection of a line segment • Bisection of an angle

	<ul style="list-style-type: none"> • Construction of an angle congruent to a given angle • Perpendicular to a line from a point on the line and from a point off the line • Construction of a line parallel to a given line through a point off the line <p>11. Identify regular polyhedra, cones, and cylinders and their properties.</p> <p>13. Use tessellations to tile the plane.</p> <p>14. Use similarity transformations</p> <ul style="list-style-type: none"> • Transform geometric figures (by means of translation, reflection, rotation) • Create fractals using ideas and techniques of self-similarity
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