



BTCS GEOMETRY Pacing Guide (2023-2024 Standards/Big Ideas Book)

Fall Term Teaching Days: **85 days**

Spring Term Teaching Days: **87 days**

Total Yearly Teaching Days: **173 Days**

TN State Standards	Book Chapter/Sections:
<p>G.CO.A.3 Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.</p> <p>G.CO.D.11 Perform formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.).</p> <p>G.GPE.A.3 Understand the relationship between the Pythagorean Theorem and the distance formula and use an efficient method to solve problems on the coordinate plane.</p> <p>G.MG.A.1 Use geometric shapes, their measures, and their properties to model objects found in a real-world context for the purpose of approximating solutions to problems.*</p> <p>NOTES/COMMENTS:</p>	<p>Chapter 1: BASICS OF GEOMETRY</p> <p>Year-Long Course: 9 Days / Year-To-Date: 9 Days Semester Course: 5 Days / ½ Year-To-Date: 5 Days</p> <p>1.1: Points, Lines, and Planes (G.CO.A.3) 1.2: Measuring and Constructing Segments (G.CO.D.11) 1.3: Using Midpoint and Distance Formulas (G.CO.D.11; G.GPE.A.3) 1.4: Perimeter and Area in the Coordinate Plane (G.GPE.A.3; G.MG.A.1) 1.5: Measuring and Constructing Angles (G.CO.D.11) 1.6: Describing Pairs of Angles (G.CO.A.3)</p> <p>RESOURCES/SUPPLIES/MATERIALS:</p> <ul style="list-style-type: none">• Flatland Movie• Flatland² Movie• Handout: Chapter 1 from “The Time Machine”• Handout: Section on Dimensions from “The Heart of Mathematics: An Invitation to Effective Thinking” (3rd edition)

<p>TN State Standards</p> <p>G.CO.C.8 Use definitions and theorems about lines and angles to solve problems and to justify relationships in geometric figures.</p> <p>G.CO.C.9 Use definitions and theorems about triangles to solve problems and to justify relationships in geometric figures.</p> <p>G.CO.C.10 Use definitions and theorems about parallelograms to solve problems and to justify relationships in geometric figures.</p> <p>G.SRT.B.3 Use congruence and similarity criteria for triangles to solve problems and to justify relationships in geometric figures.</p> <p>NOTES/COMMENTS:</p>	<p>Book Chapter/Sections:</p> <p>Chapter 2: REASONING AND PROOFS</p> <p>Year-Long Course: 13 Days / Year-To-Date: 22 Days Semester Course: 7 Days / ½ Year-To-Date: 12 Days</p> <p>2.1: Conditional Statements (G.CO.C.8; G.CO.C.9; G.CO.C.10; G.SRT.B.3) 2.2: Inductive and Deductive Reasoning (G.CO.C.8; G.CO.C.9; G.CO.C.10; G.SRT.B.3) 2.3: Postulates and Diagrams (G.CO.C.8; G.CO.C.9; G.CO.C.10; G.SRT.B.3) 2.4: Algebraic Reasoning (G.CO.C.8; G.CO.C.9; G.CO.C.10; G.SRT.B.3) 2.5: Proving Statements about Segments and Angles (G.CO.C.8) 2.6: Proving Geometric Relationships (G.CO.C.8)</p> <p>RESOURCES/SUPPLIES/MATERIALS:</p>
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<p>TN State Standards</p> <p>G.CO.A.3 Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.</p> <p>G.CO.C.8 Use definitions and theorems about lines and angles to solve problems and to justify relationships in geometric figures.</p> <p>G.CO.D.11 Perform formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper-folding, dynamic geometric software, etc.).</p> <p>G.GPE.A.1 Use coordinates to justify geometric relationships algebraically and to solve problems.</p> <p>G.GPE.A.2 Use the slope criteria for parallel and perpendicular lines to solve problems and to justify relationships in geometric figures.</p> <p>NOTES/COMMENTS:</p>	<p>Book Chapter/Sections:</p> <p>Chapter 3: PARALLEL AND PERPENDICULAR LINES</p> <p>Year-Long Course: 11 Days / Year-To-Date: 33 Days Semester Course: 6 Days / ½ Year-To-Date: 18 Days</p> <p>3.1: Pairs of Lines and Angles (G.CO.A.3) 3.2: Parallel Lines and Transversals (G.CO.C.8) 3.3: Proofs with Parallel Lines (G.CO.C.8; G.CO.D.11) 3.4: Proofs with Perpendicular Lines (G.CO.C.8; G.CO.D.11) 3.5: Equations of Parallel and Perpendicular Lines (G.GPE.A.1; G.GPE.A.2)</p> <p>RESOURCES/SUPPLIES/MATERIALS:</p>
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<p>TN State Standards</p> <p>G.CO.A.1 Describe transformations as functions that take points in the plane (pre-image) as inputs and give other points (image) as outputs. Compare transformations that preserve distance and angle measure to those that do not, by hand for basic transformations and using technology for more complex cases.</p> <p>G.CO.A.2 Given a rectangle, parallelogram, trapezoid, or regular polygon, determine the transformations that carry the shape onto itself and describe them in terms of the symmetry of the figure.</p> <p>G.CO.A.3 Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.</p> <p>G.CO.A.4 Given a geometric figure, draw the image of the figure after a sequence of one or more rigid motions, by hand and using technology. Identify a sequence of rigid motions that will carry a given figure onto another.</p> <p>G.CO.B.5 Given two figures, use the definition of congruence in terms of rigid motions to determine informally if they are congruent.</p> <p>G.SRT.A.1 Use properties of dilations given by a center and a scale factor to solve problems and to justify relationships in geometric figures.</p> <p>G.SRT.A.2 Define similarity in terms of transformations. Use transformations to determine whether two figures are similar.</p> <p>NOTES/COMMENTS:</p>	<p>Book Chapter/Sections:</p> <p>Chapter 4: TRANSFORMATIONS</p> <p>Year-Long Course: 14 Days / Year-To-Date: 47 Days Semester Course: 7 Days / ½ Year-To-Date: 25 Days</p> <p>4.1: Translations (G.CO.A.1; G.CO.A.3; G.CO.A.4; G.CO.B.5) 4.2: Reflections (G.CO.A.1; G.CO.A.2; G.CO.A.3; G.CO.A.4; G.CO.B.5) 4.3: Rotations (G.CO.A.1; G.CO.A.2; G.CO.A.3; G.CO.A.4; G.CO.B.5) 4.4: Congruence and Transformations (G.CO.A.4; G.CO.B.5) 4.5: Dilations (G.CO.A.1; G.SRT.A.1) 4.6: Similarity and Transformations (G.CO.A.4; G.SRT.A.2)</p> <p>RESOURCES/SUPPLIES/MATERIALS:</p>
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<p>TN State Standards</p> <p>G.CO.B.6 Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.</p> <p>G.CO.B.7 Explain how the criteria for triangle congruence (ASA, SAS, AAS, SSS, and HL) follow from the definition of congruence in terms of rigid motions.</p> <p>G.CO.C.9 Use definitions and theorems about triangles to solve problems and to justify relationships in geometric figures.</p> <p>G.SRT.B.3 Use congruence and similarity criteria for triangles to solve problems and to justify relationships in geometric figures.</p> <p>G.GPE.A.1 Use coordinates to justify geometric relationships algebraically and to solve problems.</p> <p>NOTES/COMMENTS:</p>	<p>Book Chapter/Sections:</p> <p>Chapter 5: CONGRUENT TRIANGLES</p> <p>Year-Long Course: 15 Days / Year-To-Date: 62 Days Semester Course: 7 Days / ½ Year-To-Date: 32 Days</p> <p>5.1: Angles of Triangles (G.CO.C.9; G.GPE.A.1) 5.2: Congruent Polygons (G.CO.B.6) 5.3: Proving Triangle Congruence by SAS (G.CO.B.7) 5.4: Equilateral and Isosceles Triangles (G.CO.C.9) 5.5: Proving Triangle Congruence by SSS (G.CO.B.7) 5.6: Proving Triangle Congruence by ASA and AAS (G.CO.B.7) 5.7: Using Congruent Triangles (G.SRT.B.3) 5.8: Coordinate Proofs (G.GPE.A.1)</p> <p>RESOURCES/SUPPLIES/MATERIALS:</p>
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<p>TN State Standards</p> <p>G.CO.C.8 Use definitions and theorems about lines and angles to solve problems and to justify relationships in geometric figures.</p> <p>G.CO.C.9 Use definitions and theorems about triangles to solve problems and to justify relationships in geometric figures.</p> <p>G.CO.D.12 Use geometric constructions to solve geometric problems in context, by hand and using technology.*</p> <p>G.GPE.A.1 Use coordinates to justify geometric relationships algebraically and to solve problems.</p> <p>NOTES/COMMENTS:</p> <p>*Pull in equations of circles (in a coordinate plane) with section 6.1. The EOC test questions at level 4 most likely combine the equation of a circle with finding the circumcenter of a triangle (right triangle) as the circumcenter will be at the midpoint of the diameter of the right triangle.</p>	<p>Book Chapter/Sections:</p> <p>Chapter 6: RELATIONSHIPS WITHIN TRIANGLES</p> <p>Year-Long Course: 14 Days / Year-To-Date: 76 Days Semester Course: 7 Days / ½ Year-To-Date: 39 Days</p> <p>Year-Long: You should complete chapter 6+ by December Semester Course: You should complete chapter 6+ by Mid-terms</p> <p>6.1: Perpendicular and Angle Bisectors (G.CO.C.8; G.CO.D.12) 6.2: Bisectors of Triangles (G.CO.C.9; G.CO.D.12) 6.3: Medians and Altitudes of Triangles (G.CO.C.9; G.GPE.A.1) 6.4: The Triangle Midsegment Theorem (G.CO.C.9) 6.5: Indirect Proof and Inequalities in One Triangle (G.CO.C.9) 6.6: Inequalities in Two Triangles (G.CO.C.9)</p> <p>RESOURCES/SUPPLIES/MATERIALS:</p>
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<p>TN State Standards</p> <p>G.CO.C.10 Use definitions and theorems about parallelograms to solve problems and to justify relationships in geometric figures.</p> <p>G.SRT.A.2 Define similarity in terms of transformations. Use transformations to determine whether two figures are similar.</p> <p>G.GPE.A.1 Use coordinates to justify geometric relationships algebraically and to solve problems.</p> <p>NOTES/COMMENTS:</p>	<p>Book Chapter/Sections:</p> <p>Chapter 7: QUADRILATERALS AND OTHER POLYGONS</p> <p>Year-Long Course: 13 Days / Year-To-Date: 89 Days Semester Course: 7 Days / ½ Year-To-Date: 46 Days</p> <p>7.1: Angles of Polygons (G.SRT.A.2) 7.2: Properties of Parallelograms (G.CO.C.10) 7.3: Proving That a Quadrilateral is a Parallelogram (G.CO.C.10; G.GPE.A.1) 7.4: Properties of Special Parallelograms (G.CO.C.10; G.GPE.A.1) 7.5: Properties of Trapezoids and Kites (G.GPE.A.1)</p> <p>RESOURCES/SUPPLIES/MATERIALS:</p>
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<p>TN State Standards</p> <p>G.SRT.A.2 Define similarity in terms of transformations. Use transformations to determine whether two figures are similar.</p> <p>G.SRT.B.3 Use congruence and similarity criteria for triangles to solve problems and to justify relationships in geometric figures.</p> <p>G.GPE.A.2 Use the slope criteria for parallel and perpendicular lines to solve problems and to justify relationships in geometric figures.</p> <p>NOTES/COMMENTS:</p>	<p>Book Chapter/Sections:</p> <p>Chapter 8: SIMILARITY</p> <p>Year-Long Course: 11 Days / Year-To-Date: 100 Days Semester Course: 6 Days / ½ Year-To-Date: 52 Days</p> <p>8.1: Similar Polygons (G.SRT.A.2; G.SRT.B.3) 8.2: Proving Triangle Similarity by AA (G.SRT.B.3) 8.3: Proving Triangle Similarity by SSS and SAS (G.SRT.B.3; G.GPE.A.2) 8.4: Proportionality Theorems (G.SRT.B.3)</p> <p>RESOURCES/SUPPLIES/MATERIALS:</p>
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<p>TN State Standards</p> <p>G.SRT.B.3 Use congruence and similarity criteria for triangles to solve problems and to justify relationships in geometric figures.</p> <p>G.SRT.C.4 Use side ratios in right triangles to define trigonometric ratios.</p> <ul style="list-style-type: none"> a. Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles. b. Explain and use the relationship between the sine and cosine of complementary angles. <p>G.SRT.C.5 Solve triangles.*</p> <ul style="list-style-type: none"> a. Know and use the Pythagorean Theorem and trigonometric ratios (sine, cosine, tangent, and their inverses) to solve right triangles in a real world context.* b. Know and use relationships within special right triangles to solve problems in a real-world context.* c. Use the Law of Sines and Law of Cosines to solve non-right triangles in a real-world context.* <p>NOTES/COMMENTS:</p>	<p>Book Chapter/Sections:</p> <p>Chapter 9: RIGHT TRIANGLES AND TRIGONOMETRY</p> <p>Year-Long Course: 14 Days / Year-To-Date: 114 Days Semester Course: 7 Days / ½ Year-To-Date: 59 Days</p> <p>9.1: The Pythagorean Theorem (G.SRT.B.3; G.SRT.C.5a) 9.2: Special Right Triangles (G.SRT.B.3; G.SRT.C.5b) 9.3: Similar Right Triangles (G.SRT.B.3) 9.4: The Tangent Ratio (G.SRT.C.4a; G.SRT.C.5a) 9.5: The Sine and Cosine Ratios (G.SRT.C.4a; G.SRT.C.4b; G.SRT.C.5a) 9.6: Solving Right Triangles (G.SRT.C.5a) 9.7: Law of Sines and Law of Cosines (G.SRT.C.5c)</p> <p>RESOURCES/SUPPLIES/MATERIALS:</p>
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TN State Standards	Book Chapter/Sections:
<p>G.N.Q.A.1 Use units as a way to understand real world problems.*</p> <ul style="list-style-type: none"> a. Use appropriate quantities in formulas, converting units as necessary.* b. Define and justify appropriate quantities within a context for the purpose of modeling.* c. Choose an appropriate level of accuracy when reporting quantities.* <p>G.SRT.B.3 Use congruence and similarity criteria for triangles to solve problems and to justify relationships in geometric figures.</p> <p>G.C.A.1 Use proportional relationships between the area of a circle and the area of a sector within the circle to solve problems in a real-world context.*</p> <p>G.GPE.A.1 Use coordinates to justify geometric relationships algebraically and to solve problems.</p> <p>G.GPE.A.3 Understand the relationship between the Pythagorean Theorem and the distance formula and use an efficient method to solve problems on the coordinate plane.</p> <p>G.MG.A.1 Use geometric shapes, their measures, and their properties to model objects found in a real-world context for the purpose of approximating solutions to problems.*</p> <p>NOTES/COMMENTS:</p>	<p>Chapter 10: CIRCUMFERENCE AND AREA</p> <p>Year-Long Course: 13 Days / Year-To-Date: 127 Days Semester Course: 7 Days / ½ Year-To-Date: 66 Days</p> <p>10.1: Circumference (G.GPE.A.1; G.GPE.A.3) 10.2: Finding Arc Measures (G.C.A.1) 10.3: Areas of Circles and Sectors (G.N.Q.A.1c; G.C.A.1; G.GPE.A.1; G.GPE.A.3) 10.4: Areas of Polygons (G.N.Q.A.1a; ; G.SRT.B.3) 10.5: Modeling with Area (G.N.Q.A.1b; G.N.Q.A.1c; G.MG.A.1)</p> <p>RESOURCES/SUPPLIES/MATERIALS:</p>

<p>TN State Standards</p> <p>G.N.Q.A.1 Use units as a way to understand real world problems.*</p> <ul style="list-style-type: none"> a. Use appropriate quantities in formulas, converting units as necessary.* b. Define and justify appropriate quantities within a context for the purpose of modeling.* c. Choose an appropriate level of accuracy when reporting quantities.* <p>G.GMD.A.1 Understand and explain the formulas for the volume and surface area of a cylinder, cone, prism, and pyramid.</p> <p>G.GMD.A.2 Use volume and surface area formulas for cylinders, cones, prisms, pyramids, and spheres to solve problems in a real-world context.*</p> <p>G.MG.A.1 Use geometric shapes, their measures, and their properties to model objects found in a real-world context for the purpose of approximating solutions to problems.*</p> <p>NOTES/COMMENTS:</p>	<p>Book Chapter/Sections:</p> <p>CHAPTER 11: SURFACE AREA AND VOLUME</p> <p>Year-Long Course: 16 Days / Year-To-Date: 143 Days Semester Course: 8 Days / ½ Year-To-Date: 74 Days</p> <p>11.1: Cross Sections of Solids (G.GMD.A.1)</p> <p>11.2: Surface Areas of Prisms and Cylinders (G.N.Q.A.1b; G.N.Q.A.1c; G.GMD.A.1; G.GMD.A.2)</p> <p>11.3: Surface Areas of Pyramids and Cones (G.N.Q.A.1b; G.N.Q.A.1c; G.GMD.A.1; G.GMD.A.2)</p> <p>11.4: Volumes of Prisms and Cylinders (G.GMD.A.1; G.GMD.A.2)</p> <p>11.5: Volumes of Pyramids and Cones (G.GMD.A.1; G.GMD.A.2)</p> <p>11.6: Surface Areas and Volumes of Spheres (G.GMD.A.2)</p> <p>11.7: Modeling with Surface Area and Volume (G.N.Q.A.1b; G.N.Q.A.1c; G.MG.A.1)</p> <p>11.8: Solids of Revolution (G.GMD.A.2)</p> <p>RESOURCES/SUPPLIES/MATERIALS:</p>
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TN State Standards	Book Chapter/Sections:
<p>G.S.CP.A.1 Use set notation to represent contextual situations.*</p> <ul style="list-style-type: none"> a. Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or", "and", "not").* b. Flexibly move between visual models (Venn diagrams, frequency tables, etc.) and set notation.* <p>G.S.CP.B.2 Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A and interpret the answer in terms of the given context.*</p> <p>G.S.CP.B.3 Understand and apply the Addition Rule.*</p> <ul style="list-style-type: none"> a. Explain the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ in terms of visual models (Venn diagrams, frequency tables, etc.).* b. Apply the Addition Rule to solve problems and interpret the answer in terms of the given context.* <p>G.S.CP.C.4 Calculate probabilities using geometric figures.*</p> <p>NOTES/COMMENTS:</p>	<p>Chapter 12: PROBABILITY</p> <p>Year-Long Course: 8 Days / Year-To-Date: 151 Days Semester Course: 4 Days / ½ Year-To-Date: 78 Days</p> <p>12.1: Sample Spaces and Probability (G.S.CP.A.1a; G.S.CP.A.1b; G.S.CP.C.4)</p> <p>12.2: Conditional Probability (G.S.CP.B.2)</p> <p>12.3: Probability of Disjoint and Overlapping Events (G.S.CP.A.1; G.S.CP.A.1b; G.S.CP.B.3a; G.S.CP.B.3b)</p> <p>RESOURCES/SUPPLIES/MATERIALS:</p>