

**Prentice Hall Mathematics, Geometry © 2009**  
**Correlated to:**  
**Washington Mathematics Standards, Geometry (2008)**

***Prentice Hall Mathematics, Geometry Program Organization***

*Prentice Hall Mathematics* supports student comprehension of the mathematics by providing well organized sequence of the content, structure of the daily lesson, systematic direct instruction, and teacher support provided for each lesson.

**Content Sequence** - Prentice Hall is organized with the goal of addressing all of the mathematics standards through direct and effective instruction, building concept upon concept, skill upon skill in an order that is pedagogically sound. The Table of Contents shows the smooth flow of the book, with prerequisite skills and concepts presented before the more complex topics that depend on them.

**Starting the Chapter** - Every chapter begins by reviewing the previous standards that have been learned and overviewing the standards that will be covered in the chapter. New Vocabulary is identified to prepare students for the chapter. Finally, *Check Your Readiness* questions assess student understanding of necessary prerequisite skills and identifies which lesson they can go to for any necessary remediation.

**Lesson Organization** - The daily lesson is structured and presented in a consistent format that enables teachers to effectively present the content and monitor student understanding.

- The **Instant Check System** is a system of assessments that helps ensure standards mastery. It is comprised of assessments to use before, during, and after instruction so teachers can easily and effectively monitor student understanding.
  - Each lesson begins with *Check Skills You'll Need* to ensure students have the necessary prerequisite skills for success in the lesson. A Go for Help reference directs them to a previous lesson if remediation is necessary.
  - *Check Skills* questions after every single example provide a way to check student understanding during instruction.
  - Finally, *Checkpoint Quizzes* occur after instruction to continually monitor student progress.
- **Daily Standards Practice** is provided with a comprehensive exercise set following every lesson. Each exercise set is leveled to ensure a variety of practice. **Test Prep and Mixed Review** ensures students also have a daily opportunity to practice concepts and skills previously mastered.

**Concluding the Chapter** - The following features conclude each chapter, providing opportunities for students to review all standards and demonstrate mastery. This part of the systematic instruction provides regular opportunities for review and practice and ensures focus on and mastery of the Standards.

- **Chapter Review** – The Chapter Review serves as a chapter study guide for students by reviewing the key concepts covered in each lesson and providing an opportunity to practice. In addition, key vocabulary is reviewed.
- **Chapter Test** – Students demonstrate their understanding of the entire chapter by completing this practice chapter test.
- **Standardized Test Prep Cumulative Practice** – This provides a regular opportunity for students to practice and demonstrate mastery of all the standards that have been covered. If remediation is necessary, students are directed to a previous lesson where each concept was taught.

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**Assessment**

*Prentice Hall Mathematics* provides teachers with the assessment tools needed to inform instruction and document student progress.

The **Progress Monitoring Assessments** contains all the program assessments needed to evaluate student understanding, monitor student progress, and inform future instruction. The following assessments are included:

- **Formative Assessments**
  - Screening Test – check student readiness at the beginning of the school year
  - Benchmark Tests – monitor student progress
  - Test-Taking Strategy Practice Masters – provide opportunities to improve problem-solving skills
- **Summative Assessments** – *All the summative assessments are provided in two forms – on-level and basic versions. Both forms fully assess student progress on the course content, but the basic versions have been modified for special needs students.*
  - Quarter Tests – on-level and basic versions
  - Mid-Course Tests – on-level and basic versions
  - Final Tests – on-level and basic versions

The **Test Preparation Workbook** contains review lessons and multiple-choice practice tests.

Technology, such as the **ExamView® CD-ROM**, allows teachers to create customized assessment, with all test items correlated to state standards.

**Universal Access**

*Prentice Hall Mathematics* provides better solutions for meeting the needs of every student in the classroom. Universal Access can be fostered by modifying instruction to address individual needs, and provided adapted resources when appropriate. Prentice Hall uses a systematic method for labeling and identifying resources and instructional support. This consistency helps teachers easily identify and choose the appropriate support for specific populations of students. The Teacher's Edition provides universal access strategies in detailed daily lesson plans, and daily teaching notes to help differentiate the lesson for all learners, including special needs, below level, advanced and English Language Learners. Chapter-level support pages provide teachers with an easy-to-read overview of the chapter resources available and suggest ways in the instructional lesson to use the resources. Key ancillaries to support universal access include the All-in-One Teaching Resources and the All-in-One Student Workbooks. The Teaching Resources include leveled practice for every lesson and daily activity labs. The All-in-One Student Workbook, available as both on-level and adapted for special needs, includes daily notetaking, daily practice, daily guided problem solving, and vocabulary support.

**Instructional Planning and Support**

*Prentice Hall Mathematics* is designed to provide teachers the tools needed to effectively and easily implement the program in the classroom.

**A Road Map for Planning the Year** - A Leveled Pacing Chart is provided in the Teacher's Edition that lays out a plan for teaching all the mathematics content standards. It suggests time to spend on each Chapter, and offers support for adjusting the instruction to meeting the pacing needs of all students.

**Planning a Chapter** - The Teacher's Edition begins each chapter with a series of planning pages. These pages provide an overview of the chapter and make it easy to determine how to individualize lessons for specific students.

**Planning Daily Instruction** - Teachers can use a variety of program materials to organize their teaching. The primary planning tools are the Teacher's Edition and the Teacher Center Planning CD-

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ROM. The Teacher's Edition includes step-by-step, daily support for directing instruction. Support is organized systematically around a 4-step teaching plan of Plan, Teach, Practice, and Assess/Reteach.

**Instructional Tools to Plan, Teach, and Assess:**

- **Core Components**
  - **Student Edition** – Thorough coverage of the standards, with built-in assessments and ongoing student support
  - **Teacher's Edition** – Provides comprehensive support for planning, teaching, and providing Universal Access
- **Teacher Support**
  - **All-in-One Teaching Resources** - All teaching resources are in one convenient place. Includes leveled practice, chapter projects, alternative assessments, cumulative reviews, guided problem solving masters, and vocabulary support.
  - **Progress Monitoring Assessments** – Provides support for formative and summative assessment, with comprehensive resources for monitoring progress on the standards.
  - **Test Preparation Workbook** – Provides instruction and practice on specific test taking strategies.
  - **Teacher Center CD-ROM** – The one-stop solution for planning, teaching, and assessing. The following resources are part of the Teacher Center:
    - **Planning CD-ROM** – Powerful lesson planning software, Teacher's Edition, and Teaching Resources.
    - **Presentation CD-ROM** – Complete support for digital presentations of lessons including videos, activities, stepped-out examples, quick check assessments, and online active math
    - **MindPoint Quiz Show** – Animated game show review for chapter level mathematics
  - **ExamView Test Generator CD-ROM** – Allows teachers to quickly and easily generate tests correlated to the standards.
- **Student Support**
  - **All-in-One Student Workbook** –
    - Structured daily notetaking pages for every lesson
    - Practice for every lesson
    - Guided problem solving pages for every lesson with scaffolded questions
    - Vocabulary and study skills focusing on key mathematical vocabulary
  - **All-in-One Student Workbook, Adapted Version** – Adapted for special needs students. Includes all the resources in the regular All-in-One Student Workbooks, in an adapted form.
  - **Student Center Online** – Complete interactive textbook with videos built-in at point-of-use, digital activities, stepped-out examples, vocabulary support – and more. Also includes the All-in-One Student Workbooks.
  - **Companion Websites** - Grants instant access to a wealth of resources to support learning including vocabulary quizzes, lesson quizzes, data updates, tutorials, chapter tests, and homework video tutors.
- **Transparency Package**
  - **Classroom Aid Transparencies** - Full-color multi-use transparencies such as graphs, fraction strips, and manipulatives
  - **Additional Examples on Transparencies**
  - **Daily Skills Check and Lesson Quiz Transparencies**
  - **Standards Review Transparencies**
  - **Student Edition Answers on Transparencies**

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<b>Geometry</b>	
<b>G.1. Core Content: Logical arguments and proofs (Logic)</b>	
Students formalize the reasoning skills they have developed in previous grades and solidify their understanding of what it means to prove a geometric statement mathematically. In Geometry, students encounter the concept of formal proof built on definitions, axioms, and theorems. They use inductive reasoning to test conjectures about geometric relationships and use deductive reasoning to prove or disprove their conclusions. Students defend their reasoning using precise mathematical language and symbols.	
<b>Performance Expectation Explanatory Comments and Examples</b>	
<i>Students are expected to:</i>	
G.1.A Distinguish between inductive and deductive reasoning.	<b>SE/TE: 4-9, 94-100, 146-152, 157-164</b>
G.1.B Use inductive reasoning to make conjectures, to test the plausibility of a geometric statement, and to help find a counterexample.	<b>SE/TE: 4-9, 320, 328, 581</b>
G.1.C Use deductive reasoning to prove that a valid geometric statement is true.	<b>SE/TE: 94-100, 110-115, 146-152, 145, 247</b>
G.1.D Write the converse, inverse, and contrapositive of a valid proposition and determine their validity.	<b>SE/TE: 80-86, 87-92, 94-100, 280-285</b>
G.1.E Identify errors or gaps in a mathematical argument and develop counterexamples to refute invalid statements about geometric relationships.	<b>SE/TE: 4-9, 80-86, 280-285</b>
G.1.F Distinguish between definitions and undefined geometric terms and explain the role of definitions, undefined terms, postulates (axioms), and theorems.	<b>SE/TE: 10, 16-22, 29, 87-92</b>
<b>G.2 Core Content: Lines and angles (Geometry/Masurement)</b>	
Students study basic properties of parallel and perpendicular lines, their respective slopes, and the properties of the angles formed when parallel lines are intersected by a transversal. They prove related theorems and apply them to solve both mathematical and practical problems.	
<b>Performance Expectation Explanatory Comments and Examples</b>	
<i>Students are expected to:</i>	
G.2.A Know, prove, and apply theorems about parallel and perpendicular lines.	<b>SE/TE: 127-133, 134-140, 141-144, 126</b>
G.2.B Know, prove, and apply theorems about angles, including angles that arise from parallel lines intersected by a transversal.	<b>SE/TE: 110-115, 134-140, 147-153</b>
G.2.C Explain and perform basic compass and straightedge constructions related to parallel and perpendicular lines.	<b>SE/TE: 181-186, 51, 227, 477</b>
G.2.D Describe the intersections of lines in the plane and in space, of lines and planes, and of planes in space.	<b>SE/TE: 16-22, 23-27, 154-155, 598-604</b>

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<b>G.3. Core Content:</b> <i>Two- and three-dimensional figures (Geometry/Measurement)</i>	
Students know and can prove theorems about two- and three-dimensional geometric figures, both formally and informally. They identify necessary and sufficient conditions for proving congruence, similarity, and properties of figures. Triangles are a primary focus, beginning with general properties of triangles, working with right triangles and special triangles, proving and applying the Pythagorean Theorem and its converse, and applying the basic trigonometric ratios of sine, cosine, and tangent. Students extend their learning to other polygons and the circle, and do some work with three-dimensional figures.	
<b>Performance Expectation Explanatory Comments and Examples</b>	
<i>Students are expected to:</i>	
G.3.A Know, explain, and apply basic postulates and theorems about triangles and the special lines, line segments, and rays associated with a triangle.	<b>SE/TE: 147-153, 205-225, 228-240, 246, 272-279, 382-396, 228-240, 258, 259-270, 271</b>
G.3.B Determine and prove triangle congruence, triangle similarity, and other properties of triangles.	<b>SE/TE: 289-295, 382-397, 398-404, 204, 241-246, 397</b>
G.3.C Use the properties of special right triangles ( $30^\circ-60^\circ-90^\circ$ and $45^\circ-45^\circ-90^\circ$ ) to solve problems.	<b>SE/TE: 417-423, 425-430</b>
G.3.D Know, prove, and apply the Pythagorean Theorem and its converse.	<b>SE/TE: 417-423, 452-460, 416, 424, 432-437, 439-442</b>
G.3.E Solve problems involving the basic trigonometric ratios of sine, cosine, and tangent.	<b>SE/TE: 432-437, 439-443, 445-449, 431, 438, 444, 451, 559-562</b>
G.3.F Know, prove, and apply basic theorems about parallelograms.	<b>SE/TE: 321-327, 329-335, 157-164, 306-311, 312-318, 328</b>
G.3.G Know, prove, and apply theorems about properties of quadrilaterals and other polygons.	<b>SE/TE: 157-164, 336-341, 373-378, 546-551, 306-311</b>
G.3.H Know, prove, and apply basic theorems relating circles to tangents, chords, radii, secants, and inscribed angles.	<b>SE/TE: 566-573, 662-668, 670-676, 678-684, 677, 687-692</b>
G.3.I Explain and perform constructions related to the circle.	<b>SE/TE: 49 (#35), 581, 669, 686</b>
G.3.J Describe prisms, pyramids, parallelepipeds, tetrahedra, and regular polyhedra in terms of their faces, edges, vertices, and properties.	<b>SE/TE: 598-604, 605</b>
G.3.K Analyze cross-sections of cubes, prisms, pyramids, and spheres and identify the resulting shapes.	<b>SE/TE: 598-604</b>

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<b>G.4. Core Content:</b> <i>Geometry in the coordinate plane (Geometry/Measurement, Algebra)</i>	
Students make connections between geometry and algebra by studying geometric properties and attributes that can be represented on the coordinate plane. They use the coordinate plane to represent situations that are both purely mathematical and that arise in applied contexts. In this way, they use the power of algebra to solve problems about shapes and space.	
<b>Performance Expectation Explanatory Comments and Examples</b>	
<i>Students are expected to:</i>	
G.4.A Determine the equation of a line in the coordinate plane that is described geometrically, including a line through two given points, a line through a given point parallel to a given line, and a line through a given point perpendicular to a given line.	<b>SE/TE: 166-170, 174-180, 53-58, 165</b>
G.4.B Determine the coordinates of a point that is described geometrically.	<b>SE/TE: 53-58, 343-347, 504-505, 52, 165, 174-180, 348-353</b>
G.4.C Verify and apply properties of triangles and quadrilaterals in the coordinate plane.	<b>SE/TE: 348-353, 165, 343-347</b>
G.4.D Determine the equation of a circle that is described geometrically in the coordinate plane and, given equations for a circle and a line, determine the coordinates of their intersection(s).	<b>SE/TE: 695-700, 704(33-36)</b>
<b>G.5. Core Content:</b> <i>Geometric transformations (Geometry/Measurement)</i>	
Students continue their study of geometric transformations, focusing on the effect of such transformations and the composition of transformations on the attributes of geometric figures. They study techniques for establishing congruence and similarity by means of transformations.	
<b>Performance Expectation Explanatory Comments and Examples</b>	
<i>Students are expected to:</i>	
G.5.A Sketch results of transformations and compositions of transformations for a given two-dimensional figure on the coordinate plane, and describe the rule(s) for performing translations or for performing reflections about the coordinate axes or the line $y = x$ .	<b>SE/TE: 470-476, 478-482, 504-505, 506-512, 477, 513</b>
G.5.B Determine and apply properties of transformations.	<b>SE/TE: 470-476, 478-482, 498-502, 506-512, 477</b>
G.5.C Given two congruent or similar figures in a coordinate plane, describe a composition of translations, reflections, rotations, and dilations that superimposes one figure on the other.	<b>SE/TE: 470-476, 478-482, 483-487, 498-502, 506-512, 477, 489, 490-491</b>
G.5.D Describe the symmetries of two-dimensional figures and describe transformations, including reflections across a line and rotations about a point.	<b>SE/TE: 478-482, 483-487, 492-496, 477, 489, 513, 515-521</b>

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<b>G.6. Additional Key Content</b> ( <i>Measurement</i> )	
Students extend and formalize their work with geometric formulas for perimeter, area, surface area, and volume of two- and three-dimensional figures, focusing on mathematical derivations of these formulas and their applications in complex problems. They use properties of geometry and measurement to solve problems in purely mathematical as well as applied contexts. Students understand the role of units in measurement and apply what they know to solve problems involving derived measures like speed or density. They understand that all measurement is approximate and specify precision in measurement problems.	
<b>Performance Expectation Explanatory Comments and Examples</b>	
<i>Students are expected to:</i>	
G.6.A Derive and apply formulas for arc length and area of a sector of a circle.	<b>SE/TE: 566-573, 575-580</b>
G.6.B Analyze distance and angle measures on a sphere and apply these measurements to the geometry of the earth.	<b>SE/TE: 154-155</b>
G.6.C Apply formulas for surface area and volume of three-dimensional figures to solve problems.	<b>SE/TE: 608-614, 617-623, 624-630, 631-637, 638-643, 615, 645</b>
G.6.D Predict and verify the effect that changing one, two, or three linear dimensions has on perimeter, area, volume, or surface area of two- and three-dimensional figures.	<b>SE/TE: 553-558, 646-651, 645</b>
G.6.E Use different degrees of precision in measurement, explain the reason for using a certain degree of precision, and apply estimation strategies to obtain reasonable measurements with appropriate precision for a given purpose.	<b>SE/TE: 412-413, 764-765</b>
G.6.F Solve problems involving measurement conversions within and between systems, including those involving derived units, and analyze solutions in terms of reasonableness of solutions and appropriate units.	<b>SE/TE: 574, 763-765</b>

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<b>Geometry</b>	
<b>G.7. Core Processes:</b> Reasoning, problem solving, and communication	
Students formalize the development of reasoning in Geometry as they become more sophisticated in their ability to reason inductively and begin to use deductive reasoning in formal proofs. They extend the problem-solving practices developed in earlier grades and apply them to more challenging problems, including problems related to mathematical and applied situations. Students use a coherent problem-solving process in which they analyze the situation to determine the question(s) to be answered, synthesize given information, and identify implicit and explicit assumptions that have been made. They examine their solution(s) to determine reasonableness, accuracy, and meaning in the context of the original problem. They use correct mathematical language, terms, symbols, and conventions as they address problems in Geometry and provide descriptions and justifications of solution processes. The mathematical thinking, reasoning, and problem-solving processes students learn in high school mathematics can be used throughout their lives as they deal with a world in which an increasing amount of information is presented in quantitative ways, and more and more occupations and fields of study rely on mathematics.	
<b>Performance Expectation Explanatory Comments and Examples</b>	
<i>Students are expected to:</i>	
G.7.A Analyze a problem situation and represent it mathematically.	<b>SE/TE: This standard is addressed throughout the text. Sample citations follow: 238 (#9), 333 (#21), 352 (#37-38)</b>
G.7.B Select and apply strategies to solve problems.	<b>SE/TE: This standard is addressed throughout the texts. Sample citations follow: 232 (#33-35), 293 (#22-27), 449 (#29)</b>
G.7.C Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem.	<b>SE/TE: This standard is addressed throughout the text. Sample citations follow: 224 (#14), 293 (#28), 317 (#40)</b>
G.7.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve specific problems.	<b>SE/TE: This standard is addressed throughout the text. Sample citations follow: 27 (#40), 352 (#30-34, 37, 38), 429 (#27), 448 (#19-22)</b>
G.7.E Read and interpret diagrams, graphs, and text containing the symbols, language, and conventions of mathematics.	<b>SE/TE: This standard is addressed throughout the text. Sample citations follow: 21 (#61), 27 (#45), 457 (#32-33)</b>
G.7.F Summarize mathematical ideas with precision and efficiency for a given audience and purpose.	<b>SE/TE: This standard is addressed throughout the text. Sample citations follow: 26 (#37), 247, 510 (#27)</b>
G.7.G Synthesize information to draw conclusions and evaluate the arguments and conclusions of others.	<b>SE/TE: This standard is addressed throughout the text. Sample citations follow: 41 (#21-32), 98 (#33), 122-123, 211 (#42), 317 (#40)</b>
G.7.H Use inductive reasoning to make conjectures, and use deductive reasoning to prove or disprove conjectures.	<b>SE/TE: This standard is addressed throughout the text. Sample citations follow: 102, 185 (#21, 24), 397</b>