



**NEW JERSEY**  
**Core Curriculum Content Standards for Mathematics**  
**Grade 12**  
***Geometry: Concepts and Applications* © 2004**

CONTENT STANDARDS	PAGE REFERENCES
<b>Standard 4.1 (Number and Numerical Operations)</b> All students will develop number sense and will perform standard numerical operations and estimations on all types of numbers in a variety of ways.	
Building upon knowledge and skills gained in preceding grades, by the end of <b>Grade 12</b> , students will:	
<b>A. Number Sense</b>	
1. Extend understanding of the number system to all real numbers.	SE: 50-55, 67 #26, 127 #27, 548-553, 641 #10, 642 #19 Test 85 #1-#2 TWE: A 55
2. Compare and order rational and irrational numbers.	Rational and irrational numbers can be found on the following pages: SE: 50-55, 67 #26, 127 #27, 548-553 Test 85 #1-#2 Quiz 1 61
3. Develop conjectures and informal proofs of properties of number systems and sets of numbers.	SE: 641 #10, 642 #11, #19
<b>B. Numerical Operations</b>	
1. Extend understanding and use of operations to real numbers and algebraic procedures.	SE: 56-61, 161 #39, 214 #28, 315 #35, 378 #31, 407 #43, 412 #18, 458 #38, 548-553, 653 #17
2. Develop, apply, and explain methods for solving problems involving rational and negative exponents.	SE: 161 #39, 265 #4-#6 <i>Preparing for Standardized Tests</i> 185 #2, 272, 715 #3
3. Perform operations on matrices. <ul style="list-style-type: none"> <li>• Addition and subtraction</li> <li>• Scalar multiplication</li> </ul>	See Glencoe's <i>Algebra 1</i> © 2005 SE: 716-721, 728 #30-#33, 736 #39-#41 <i>Study Guide and Review</i> 746 #13-#22 TWE: A 721 DI 720 IE 716-717
4. Understand and apply the laws of exponents to simplify expressions involving numbers raised to powers.	SE: 161 #39, 265 #4-#6 <i>Preparing for Standardized Tests</i> 185 #2, 272, 715 #3
<b>C. Estimation</b>	
1. Recognize the limitations of estimation, assess the amount of error resulting from estimation, and determine whether the error is within acceptable tolerance limits.	The following pages contain problems with estimation: SE: 171 #2, 225 #1, 267 #34, 347 #7, 479 Examples 1 and 2, 401, 414-415 Example 2, 416 #7-#8, 417 #18-#20, #23-#24

CONTENT STANDARDS	PAGE REFERENCES
<b>Standard 4.2 (Geometry and Measurement) All students will develop spatial sense and the ability to use geometric properties, relationships, and measurement to model, describe and analyze phenomena.</b>	
<b>A. Geometric Properties</b>	
1. Use geometric models to represent real-world situations and objects and to solve problems using those models (e.g., use Pythagorean theorem to decide whether an object can fit through a doorway).	SE: 172 #9, 261 #39, 265 #11, 558 #16, #21, 565 Example 2, 573 Example 2 <i>Math in the Workplace</i> 379 <i>Preparing Standardized Tests</i> 629 #7 <i>Study Guide and Assessment</i> 270 #36 <i>Test</i> 581 #19-#20
2. Draw perspective views of 3D objects on isometric dot paper, given 2D representations (e.g., nets or projective views).	SE: 500 #32a <i>Study Guide Masters</i> 67 #1-#3 The following involve drawing 3D objects: SE: 498 #1 TWE: FA 499
3. Apply the properties of geometric shapes. <ul style="list-style-type: none"> <li>• Parallel lines - transversal, alternate interior angles, corresponding angles</li> <li>• Triangles <ul style="list-style-type: none"> <li>a. Conditions for congruence</li> <li>b. Segment joining midpoints of two sides is parallel to and half the length of the third side</li> <li>c. Triangle inequality</li> </ul> </li> <li>• Minimal conditions for a shape to be a special quadrilateral</li> <li>• Circles - arcs, central and inscribed angles, chords, tangents</li> <li>• Self-similarity</li> </ul>	SE: 148-153, 156-161, 162-167, 203-207, 210-214, 215-219, 327-332, 586-591, 592-597 <i>Investigation</i> 208-209
4. Use reasoning and some form of proof to verify or refute conjectures and theorems. <ul style="list-style-type: none"> <li>• Verification or refutation of proposed proofs</li> <li>• Simple proofs involving congruent triangles</li> <li>• Counterexamples to incorrect conjectures</li> </ul>	SE: 638-643, 644-648, 649-653, 654-659, 660-665 <i>Investigation</i> 666-667 TWE: F 649 ICE 645 <i>Enrichment Masters</i> 90 <i>Practice Masters</i> 89
<b>B. Transforming Shapes</b>	
1. Determine, describe, and draw the effect of a transformation, or a sequence of transformations, on a geometric or algebraic object, and, conversely, determine whether and how one object can be transformed to another by a transformation or a sequence of transformations.	SE: 198-202, 207 #29-#31, 687-690, 692-696, 697-702, 703-707 <i>Investigation</i> 708-709 <i>Math in the Workplace</i> 691 TWE: A 202 EC 690
2. Recognize three-dimensional figures obtained through transformations of two-dimensional figures (e.g., cone as rotating an isosceles triangle about an altitude), using software as an aid to visualization.	SE: 467 #44

CONTENT STANDARDS	PAGE REFERENCES
3. Determine whether two or more given shapes can be used to generate a tessellation.	SE: 440-444 <i>Math in the Workplace</i> 445 <i>Problem-Solving Workshop</i> 401 TWE: EC 444 ML 440 RA 441 <i>Study Guide Masters</i> 60
4. Generate and analyze iterative geometric patterns. <ul style="list-style-type: none"> <li>• Fractals (e.g., Sierpinski's Triangle)</li> <li>• Patterns in areas and perimeters of self-similar figures</li> <li>• Outcome of extending iterative process indefinitely</li> </ul>	SE: 4-7, 8 #27-31, 9 #38, 17 #38 <i>Investigation</i> 10-11
<b>C. Coordinate Geometry</b>	
1. Use coordinate geometry to represent and verify properties of lines. <ul style="list-style-type: none"> <li>• Distance between two points</li> <li>• Midpoint and slope of a line segment</li> <li>• Finding the intersection of two lines</li> <li>• Lines with the same slope are parallel</li> <li>• Lines that are perpendicular have slopes whose product is -1</li> </ul>	SE: 77-81, 101 #34, 168-173, 262-267 <i>Test 85</i> #15-#17 TWE: ICE 78, 169 RA 80, 265 <i>Practice Masters</i> 23
2. Show position and represent motion in the coordinate plane using vectors. <ul style="list-style-type: none"> <li>• Addition and subtraction of vectors</li> </ul>	SE: <i>Investigation</i> 74-75
<b>D. Units of Measurement</b>	
1. Understand and use the concept of significant digits.	SE: 428
2. Choose appropriate tools and techniques to achieve the specified degree of precision and error needed in a situation. <ul style="list-style-type: none"> <li>• Degree of accuracy of a given measurement tool</li> <li>• Finding the interval in which a computed measure (e.g., area or volume) lies, given the degree of precision of linear measurements</li> </ul>	SE: 58, 59 #3 TWE: A 61
<b>E. Measuring Geometric Objects</b>	
1. Use techniques of indirect measurement to represent and solve problems. <ul style="list-style-type: none"> <li>• Similar triangles</li> <li>• Pythagorean theorem</li> <li>• Right triangle trigonometry (sine, cosine, tangent)</li> </ul>	SE: 256-261, 358-361, 554-558, 559-563, 564-569, 572-577 <i>Investigation</i> 570-571 <i>Problem-Solving Workshop</i> 227 TWE: ML 564 RA 259

CONTENT STANDARDS	PAGE REFERENCES
<p>2. Use a variety of strategies to determine perimeter and area of plane figures and surface area and volume of 3D figures.</p> <ul style="list-style-type: none"> <li>• Approximation of area using grids of different sizes</li> <li>• Finding which shape has minimal (or maximal) area, perimeter, volume, or surface area under given conditions using graphing calculators, dynamic geometric software, and/or spreadsheets</li> <li>• Estimation of area, perimeter, volume, and surface area</li> </ul>	<p>SE: 35-40, 413-418, 419-424, 425-430, 504-509, 510-515, 516-521, 522-527, 528-533 <i>Problem-Solving Workshop</i> 495</p>
<p><b>Standard 4.3 (Patterns and Algebra) All students will represent and analyze relationships among variable quantities and solve problems involving patterns, functions, and algebraic concepts and processes.</b></p>	
<p><b>A. Patterns</b></p>	
<p>1. Use models and algebraic formulas to represent and analyze sequences and series.</p> <ul style="list-style-type: none"> <li>• Explicit formulas for <math>n^{\text{th}}</math> terms</li> <li>• Sums of finite arithmetic series</li> <li>• Sums of finite and infinite geometric series</li> </ul>	<p>SE: 4-9, 101 #37, 153 #50, 250 #23 <i>Investigation</i> 10-11 <i>Problem-Solving Workshop</i> 3</p> <p>TWE: EC 9 ICE 4-5 RA 7 <i>Practice Masters</i> 1</p>
<p>2. Develop an informal notion of limit.</p>	<p>The following can be used to discuss an informal notion of limit: TWE: EC 407 ICE 7</p>
<p>3. Use inductive reasoning to form generalizations.</p>	<p>SE: 4-9, 458 #37, 653 #16 <i>Investigation</i> 10-11 <i>Problem-Solving Workshop</i> 3, 631 <i>Study Guide and Assessment</i> 42 Lesson 1-1 TWE: ICE 4-5</p>
<p><b>B. Functions and Relationships</b></p>	
<p>1. Understand relations and functions and select, convert flexibly among, and use various representations for them, including equations or inequalities, tables, and graphs.</p>	<p>SE: 174-179 <i>Preparing for Standardized Tests</i> 492-493</p> <p>TWE: A 179 EC 179 ML 174</p>

CONTENT STANDARDS	PAGE REFERENCES
<p>2. Analyze and explain the general properties and behavior of functions of one variable, using appropriate graphing technologies.</p> <ul style="list-style-type: none"> <li>• Slope of a line or curve</li> <li>• Domain and range</li> <li>• Intercepts</li> <li>• Continuity</li> <li>• Maximum/minimum</li> <li>• Estimating roots of equations</li> <li>• Intersecting points as solutions of systems of equations</li> <li>• Rates of change</li> </ul>	<p>SE: 168-173, 174-179, 686 #32  TWE: A 179, 173  EC 179  F 174, 681  ICE 169  ML 174</p>
<p>3. Understand and perform transformations on commonly-used functions.</p> <ul style="list-style-type: none"> <li>• Translations, reflections, dilations</li> <li>• Effects on linear and quadratic graphs of parameter changes in equations</li> <li>• Using graphing calculators or computers for more complex functions</li> </ul>	<p>Transformations are covered on the following pages:  SE: 198-202, 207 #29-#31, 687-690, 692-696, 697-702, 703-707  <i>Investigation</i> 708-709  <i>Math in the Workplace</i> 691  TWE: A 202  EC 690</p>
<p>4. Understand and compare the properties of classes of functions, including exponential, polynomial, rational, and trigonometric functions.</p> <ul style="list-style-type: none"> <li>• Linear vs. non-linear</li> <li>• Symmetry</li> <li>• Increasing/decreasing on an interval</li> </ul>	<p>Linear equations are covered on pages 174-179.</p>
<b>C. Modeling</b>	
<p>1. Use functions to model real-world phenomena and solve problems that involve varying quantities.</p> <ul style="list-style-type: none"> <li>• Linear, quadratic, exponential, periodic (sine and cosine), and step functions (e.g., price of mailing a first-class letter over the past 200 years)</li> <li>• Direct and inverse variation</li> <li>• Absolute value</li> <li>• Expressions, equations and inequalities</li> <li>• Same function can model variety of phenomena</li> <li>• Growth/decay and change in the natural world</li> <li>• Applications in mathematics, biology, and economics (including compound interest)</li> </ul>	<p>SE: 9 #39, 40 #37, 177 #12, 178 #35, 179 #36, #38-#39, 407 #43  <i>Preparing for Standardized Tests</i> 306, 545 #10</p>
<p>2. Analyze and describe how a change in an independent variable leads to change in a dependent one.</p>	<p>SE: 416 #3, 422 #1, 428 #2, 513 #3, 525 #3, 648 #23  TWE: EC 533</p>

CONTENT STANDARDS	PAGE REFERENCES
3. Convert recursive formulas to linear or exponential functions (e.g., Tower of Hanoi and doubling).	See Glencoe's <i>Algebra 1</i> © 2005 SE: 234, 235 Example 4, 236 #12-#13, 237 #47, #51, 245 #32 <i>Algebra Activity</i> 241 TWE: IE 235 #4a
<b>D. Procedures</b>	
1. Evaluate and simplify expressions. <ul style="list-style-type: none"> <li>Add and subtract polynomials</li> <li>Multiply a polynomial by a monomial or binomial</li> <li>Divide a polynomial by a monomial</li> </ul>	SE: 130 Example 3, 195 Example 3, 265 #4-#6, 422 #4-#6, 548-553 <i>Preparing for Standardized Tests</i> 86, 272, 273 #1, 715 #3, #6 <i>Test</i> 581 #3-#6
2. Select and use appropriate methods to solve equations and inequalities. <ul style="list-style-type: none"> <li>Linear equations - algebraically</li> <li>Quadratic equations - factoring (when the coefficient of <math>x^2</math> is 1) and using the quadratic formula</li> <li>All types of equations using graphing, computer, and graphing calculator techniques</li> </ul>	SE: 57 Example 2, 281 #39, 287 #30, 373 #30, 515 #30, 653 #13-#15 <i>Preparing for Standardized Tests</i> 185 #5, 272, 398, 451 #5
3. Judge the meaning, utility, and reasonableness of the results of symbol manipulations, including those carried out by technology.	SE: 632-635, 637 #18-25
<b>Standard 4.4 (Data Analysis, Probability, and Discrete Mathematics) All students will develop an understanding of the concepts and techniques of data analysis, probability, and discrete mathematics, and will use them to model situations, solve problems, and analyze and draw appropriate inferences from data.</b>	
<b>A. Data Analysis</b>	
1. Use surveys and sampling techniques to generate data and draw conclusions about large groups. <ul style="list-style-type: none"> <li>Advantages/disadvantages of sample selection methods (e.g., convenience sampling, responses to survey, random sampling)</li> </ul>	SE: <i>Problem-Solving Workshop</i> 89
2. Evaluate the use of data in real-world contexts. <ul style="list-style-type: none"> <li>Accuracy and reasonableness of conclusions drawn</li> <li>Bias in conclusions drawn (e.g., influence of how data is displayed)</li> <li>Statistical claims based on sampling</li> </ul>	SE: <i>Preparing for Standardized Tests</i> 185 #1 <i>Problem-Solving Workshop</i> 631
3. Design a statistical experiment, conduct the experiment, and interpret and communicate the outcome.	See Glencoe's <i>Algebra 1</i> © 2005 SE: 712 #29 <i>Algebra Activity</i> 347, 622, 783
4. Estimate or determine lines of best fit (or curves of best fit if appropriate) with technology, and use them to interpolate within the range of the data.	See Glencoe's <i>Algebra 1</i> © 2005 SE: <i>Algebra Activity</i> 573 <i>Graphing Calculator Investigation</i> 729-730 TWE: A 730

CONTENT STANDARDS	PAGE REFERENCES
5. Analyze data using technology, and use statistical terminology to describe conclusions. <ul style="list-style-type: none"> <li>• Measures of dispersion: variance, standard deviation, outliers</li> <li>• Correlation coefficient</li> <li>• Normal distribution (e.g., approximately 95% of the sample lies between two standard deviations on either side of the mean)</li> </ul>	SE: 184-185
<b>B. Probability</b>	
1. Calculate the expected value of a probability-based game, given the probabilities and payoffs of the various outcomes, and determine whether the game is fair.	This objective can be met during a teacher/class discussion using the following: SE: <i>Preparing for Standardized Tests</i> 139 #10
2. Use concepts and formulas of area to calculate geometric probabilities.	SE: 484 Example 3, 486 #7, #24-#25, 487 #28
3. Model situations involving probability with simulations (using spinners, dice, calculators and computers) and theoretical models, and solve problems using these models.	The following contain problems that could be used to model situations involving probability: SE: <i>Preparing for Standardized Tests</i> 139 #10, 545 #5, 629 #2
4. Determine probabilities in complex situations. <ul style="list-style-type: none"> <li>• Conditional events</li> <li>• Complementary events</li> <li>• Dependent and independent events</li> </ul>	SE: <i>Preparing for Standardized Tests</i> 138, 185 #9, 347 #2, 545 #5, 629 #2
5. Estimate probabilities and make predictions based on experimental and theoretical probabilities.	Experimental and theoretical probabilities are on page 484.
6. Understand and use the “law of large numbers” (that experimental results tend to approach theoretical probabilities after a large number of trials).	This objective can be met during a teacher/class discussion of experimental probability found on page 484.
<b>C. Discrete Mathematics–Systematic Listing and Counting</b>	
1. Calculate combinations with replacement (e.g., the number of possible ways of tossing a coin 5 times and getting 3 heads) and without replacement (e.g., number of possible delegations of 3 out of 23 students).	SE: <i>Preparing for Standardized Tests</i> 138, 139 #1, 185 #4
2. Apply the multiplication rule of counting in complex situations, recognize the difference between situations with replacement and without replacement, and recognize the difference between ordered and unordered counting situations.	SE: 138-139
3. Justify solutions to counting problems.	Counting problems are on the following pages: SE: <i>Preparing for Standardized Tests</i> 138, 139 #1, 185 #4
4. Recognize and explain relationships involving combinations and Pascal’s Triangle, and apply those methods to situations involving probability.	This objective can be met during a teacher/class discussion of Pascal’s Triangle on pages 10-11.

CONTENT STANDARDS	PAGE REFERENCES
<b>D. Discrete Mathematics–Vertex-Edge Graphs and Algorithms</b>	
1. Use vertex-edge graphs and algorithmic thinking to represent and solve practical problems. <ul style="list-style-type: none"> <li>• Circuits that include every edge in a graph</li> <li>• Circuits that include every vertex in a graph</li> <li>• Scheduling problems (e.g., when project meetings should be scheduled to avoid conflicts) using graph coloring</li> <li>• Applications to science (e.g., who-eats-whom graphs, genetic trees, molecular structures)</li> </ul>	SE: <i>Investigation 11 #3-#5</i>
2. Explore strategies for making fair decisions. <ul style="list-style-type: none"> <li>• Combining individual preferences into a group decision (e.g., determining winner of an election or selection process)</li> <li>• Determining how many Student Council representatives each class (9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup>, and 12<sup>th</sup> grade) gets when the classes have unequal sizes (apportionment)</li> </ul>	SE: 139 #10
<b>Standard 4.5 (Mathematical Processes) All students will use mathematical processes of problem solving, communication, connections, reasoning, representations, and technology to solve problems and communicate mathematical ideas.</b>	
<b>Cumulative Progress Indicators</b>	
At each grade level, with respect to content appropriate for that grade level, students will:	
<b>A. Problem Solving</b>	
1. Learn mathematics through problem solving, inquiry, and discovery.	SE: <i>Graphing Calculator Exploration 170, 574</i> <i>Hands-On Geometry 6, 283, 692</i> <i>Investigation 102-103, 502-503, 666-667</i> <i>Problem-Solving Workshop 49, 401</i>
2. Solve problems that arise in mathematics and in other contexts (cf. workplace readiness standard 8.3). <ul style="list-style-type: none"> <li>• Open-ended problems</li> <li>• Non-routine problems</li> <li>• Problems with multiple solutions</li> <li>• Problems that can be solved in several ways</li> </ul>	SE: <i>Math in the Workplace 41, 115, 459</i> <i>Problem-Solving Workshop 89, 349, 675</i> TWE: EC 61, 109 FA 113, 335
3. Select and apply a variety of appropriate problem-solving strategies (e.g., try a simpler problem or make a diagram) to solve problems.	SE: 37-40, 287 #25, 373 #23, 576 #33 <i>Math in the Workplace 41</i> <i>Problem-Solving Workshop 49, 453</i> TWE: EC 40 ICE 37 Example 4 ML 35
4. Pose problems of various types and levels of difficulty.	SE: 53 #2 TWE: A 243 ML 56 RA 384

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5. Monitor their progress and reflect on the process of their problem-solving activity.	TWE: RA 59, 177 This objective can be met through reflection and discussion with the following: SE: <i>Problem-Solving Workshop</i> 49, 89, 227, 275, 309, 349, 453, 495
<b>B. Communication</b>	
1. Use communication to organize and clarify their mathematical thinking. <ul style="list-style-type: none"> <li>• Reading and writing</li> <li>• Discussion, listening, and questioning</li> </ul>	SE: 200 #1, 330 #2, 485 #2, 520 #3, 603 #2 <i>Problem-Solving Workshop</i> 3 TWE: RA 59, 456, 566, 575
2. Communicate their mathematical thinking coherently and clearly to peers, teachers, and others, both orally and in writing.	SE: <i>Problem-Solving Workshop</i> 49, 141, 631 TWE: FA 297, 556 RA 38, 80, 112, 684, 704
3. Analyze and evaluate the mathematical thinking and strategies of others.	SE: 15 #2, 59 #3, 108 #3, 265 #3, 319 #3, 372 #3, 416 #3, 513 #3, 609 #3, 689 #3
4. Use the language of mathematics to express mathematical ideas precisely.	SE: 59 #1, 125 #2, 200 #1, 330 #2, 531 #1 TWE: RA 80, 112, 249, 575, 603
<b>C. Connections</b>	
1. Recognize recurring themes across mathematical domains (e.g., patterns in number, algebra, and geometry).	The following examples show how this objective can be met through teacher/class discussion throughout the book. Patterns are found on pages: SE: 4-9, 501 #33b <i>Graphing Calculator Investigation</i> 32 <i>Investigation</i> 10-11 Problem-solving techniques are found on pages: SE: 35-40 <i>Problem-Solving Workshop</i> 227, 495 Making and verifying conjectures are found on pages: SE: <i>Extending the Investigation</i> 103, <i>Graphing Calculator</i> Exploration 316-317 <i>Hands-On Geometry</i> 283
2. Use connections among mathematical ideas to explain concepts (e.g., two linear equations have a unique solution because the lines they represent intersect at a single point).	SE: 298 #3, 539 #23, 678 #1, 680 #26, 688 #2 TWE: A 378 EC 466, 680 RA 507
3. Recognize that mathematics is used in a variety of contexts outside of mathematics.	SE: 7 Example 5, 163 Example 1, 366 #5, 557 #15 <i>Investigation</i> 708-709 <i>Math in the Workplace</i> 23, 115 <i>Problem-Solving Workshop</i> 49, 309, 631
4. Apply mathematics in practical situations and in other disciplines.	SE: 55 #37, 121 #30, 213 #7, 373 #23, 409 Example 1, 597 #26, 647 #16 <i>Problem-Solving Workshop</i> 49, 349, 675
5. Trace the development of mathematical concepts over time and across cultures (cf. world languages and social studies standards).	SE: 501 #33 <i>Investigation</i> 154-155, 380-381, 432-433

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6. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole.	SE: 79 #2, 190 #7, 265 #2, 371 Example 3, 484 Example 3, 651 #2 TWE: PAS 88, 186, 308, 494
<b>D. Reasoning</b>	
1. Recognize that mathematical facts, procedures, and claims must be justified.	SE: 165 #3, 638-639, 644-648, 649-653, 654-659, 660-665 <i>Extending the Investigation</i> 103 <i>Hands-On Geometry</i> 6 <i>Problem-Solving Workshop</i> 141 TWE: RA 285
2. Use reasoning to support their mathematical conclusions and problem solutions.	SE: 15 #2, 131 #2, 147 #50, 197 #23 <i>Investigation</i> 208-209 #1d, #2d TWE: EC 22, 109, 147, 214 RA 125
3. Select and use various types of reasoning and methods of proof.	SE: 165 #3, 485 #2, 638-643, 644-648, 654-659, 660-665 <i>Investigation</i> 666-667 TWE: RA 285, 312
4. Rely on reasoning, rather than answer keys, teachers, or peers, to check the correctness of their problem solutions.	SE: 37-38, 64 Example 3, 79 #1, 351 Example 3 TWE: PA 259
5. Make and investigate mathematical conjectures. <ul style="list-style-type: none"> <li>• Counterexamples as a means of disproving conjectures</li> <li>• Verifying conjectures using informal reasoning or proofs.</li> </ul>	SE: 6 Example 4, 8 #14, 17 #37, 28 #30, 658 #15, 659 #18, 664 #16-#17 <i>Extending the Investigation</i> 103 <i>Hands-On Geometry</i> 6 TWE: HG 6
6. Evaluate examples of mathematical reasoning and determine whether they are valid.	SE: 79 #3, 108 #3, 212 #2, 330 #3, 352 #3, 411 #3, 513 #3, 609 #3, 641 #3, 658 #16
<b>E. Representations</b>	
1. Create and use representations to organize, record, and communicate mathematical ideas. <ul style="list-style-type: none"> <li>• Concrete representations (e.g., base-ten blocks or algebra tiles)</li> <li>• Pictorial representations (e.g., diagrams, charts, or tables)</li> <li>• Symbolic representations (e.g., a formula)</li> <li>• Graphical representations (e.g., a line graph)</li> </ul>	SE: 40 #32 <i>Graphing Calculator Exploration</i> 170 <i>Hands-On Geometry</i> 6, 469 <i>Problem-Solving Workshop</i> 275, 495 TWE: FA 335 RA 71, 196, 292
2. Select, apply, and translate among mathematical representations to solve problems.	SE: 37 Example 4, 177 #12, 597 #30, 676 Example 1 <i>Investigation</i> 102-103, 208-209 <i>Problem-Solving Workshop</i> 227, 275, 495, 547
3. Use representations to model and interpret physical, social, and mathematical phenomena.	SE: <i>Hands-On Geometry</i> 6, 19, 203 <i>Investigation</i> 502-503 TWE: A 233, 317, 665 ML 198 RA 92, 196

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<b>F. Technology</b>	
1. Use technology to gather, analyze, and communicate mathematical information.	SE: <i>Graphing Calculator Exploration</i> 316-317 <i>Problem-Solving Workshop</i> 3, 49, 141, 187, 275, 585, 631, 675
2. Use computer spreadsheets, software, and graphing utilities to organize and display quantitative information.	SE: <i>Investigation</i> 433 #2 <i>Problem-Solving Workshop</i> 89, 187, 227, 495
3. Use graphing calculators and computer software to investigate properties of functions and their graphs.	Graphing calculators and computer software are used to investigate geometric properties in the following: SE: <i>Extending the Investigation</i> 155, 209, 289, 709 <i>Graphing Calculator Investigation</i> 79, 170, 246-247, 316-317, 574, 608
4. Use calculators as problem-solving tools (e.g., to explore patterns, to validate solutions).	SE: 479 Example 1, 484 Example 3, 551 Example 9, 555 Example 1, 567 Example 4 <i>Extending the Investigation</i> 289 <i>Graphing Calculator Investigation</i> 504 <i>Investigation</i> 433 #2 <i>Problem-Solving Workshop</i> 453 <i>Technology Tip</i> 549
5. Use computer software to make and verify conjectures about geometric objects.	SE: <i>Extending the Investigation</i> 155, 209, 289, 709 <i>Graphing Calculator Exploration</i> 79, 170, 246-247, 316-317, 574, 608
6. Use computer-based laboratory technology for mathematical applications in the sciences.	The following contain mathematical applications in the sciences: SE: 67 #22, 287 #23, 294 #23, 354 #44-#45, 407 #35, 487 #26, 597 #26, 611 #21, 621 #13, 651 Example 2

### Codes Used for TWE Pages

A	Assess
EC	Extra Credit
F	Focus
FA	Family Activity
HG	Hands-On Geometry
ICE	In-Class Examples
ML	Motivating the Lesson
PA	Practice/Apply
PAS	Prerequisite Algebra Skills
RA	Reteaching Activity