

# MATHEMATICS I, SEMESTER B

## COURSE OVERVIEW

Mathematics I builds students' command of geometric knowledge and linear and exponential relationships. Students learn through discovery and application, developing the skills they need to break down complex challenges and demonstrate their knowledge in new situations.

Course topics include relationships between quantities; linear and exponential relationships; reasoning with equations; descriptive statistics; congruence, proofs, and constructions; and connecting algebra and geometry through coordinates.

This course supports all students as they develop computational fluency and deepen conceptual understanding. Students begin each lesson by discovering new concepts through guided instruction, and then confirm their understanding in an interactive, feedback-rich environment. Modeling activities equip students with tools for analyzing a variety of real-world scenarios and mathematical ideas. Journaling activities allow students to reason abstractly and quantitatively, construct arguments, critique reasoning, and communicate precisely. Performance tasks prepare students to synthesize their knowledge in novel, real-world scenarios and require that they make sense of multifaceted problems and persevere in solving them.

This course is built to state standards.

## COURSE COMPONENTS AND GRADING RUBRIC

The table gives a breakdown of the weight for each component in the course. Weight represents the percentage of the total score coming from each activity.

| Course Components                                                                                                                                                                                                                                                                                                              | Count | Weight |
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| <b>Pretest.</b> <i>A pretest is an optional assessment, typically designed for credit recovery. If a student shows mastery of a lesson objective, the student may be automatically exempted from the upcoming activities associated with the mastered objective. Each passing pretest grade is entered into the gradebook.</i> | 6     | 0%     |
| <b>Practice.</b> <i>A practice activity provides instruction similar to that found in a study so that students can practice or review skills necessary to complete their assignment with mastery.</i>                                                                                                                          | 6     | 5%     |
| <b>Discussion.</b> <i>A discussion activity is an opportunity for students to collaborate with their peers. This activity gives students the opportunity to practice speaking and listening in a clear and logical manner and to receive feedback from peers.</i>                                                              | 3     | 5%     |

| Course Components                                                                                                                                                             | Count     | Weight      |
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| <b>Journal.</b> <i>A journal is a short reflective writing exercise that encourages students to connect historical events and ideas to their own lives and circumstances.</i> | 5         | 5%          |
| <b>Project.</b> <i>A project is a hands-on investigation that extends over several weeks.</i>                                                                                 | 1         | 5%          |
| <b>Mastery Test.</b> <i>A mastery test is a computer-scored lesson-level summative assessment.</i>                                                                            | 36        | 40%         |
| <b>Posttest.</b> <i>A posttest appears at the end of each unit.</i>                                                                                                           | 6         | 15%         |
| <b>End-of-Semester Test.</b> <i>An end-of-semester test (EOS) appears at the end of each course.</i>                                                                          | 1         | 10%         |
| <b>Teacher-Graded Posttest.</b> <i>A posttest that prompts students for written responses appears at the end of each unit.</i>                                                | 6         | 15%         |
| <b>Total</b>                                                                                                                                                                  | <b>70</b> | <b>100%</b> |

\*Teachers may manually adjust these weights if desired, per district grading requirements.

## UNIT 1: FOUNDATIONS OF GEOMETRY

| Lesson and Duration                                                                                  | Description                                                                                                                                                                                |
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| <b>Pretest: Foundations of Geometry</b><br>40 minutes                                                | Complete the pretest (optional).                                                                                                                                                           |
| <b>Foundations of Geometry: Unit Overview</b><br>1 minute                                            | Read the unit overview.                                                                                                                                                                    |
| <b>LESSON 1</b><br><b>Induction: The Search for Rules and Patterns: Lesson Overview</b><br>5 minutes | Read the lesson objectives.                                                                                                                                                                |
| <b>Induction: The Search for Rules and Patterns: Study</b><br>35 minutes                             | Learn about looking for patterns, making conjectures, cross-referencing to history and science, real-world examples of inductive reasoning, building a triangle, and examples of symmetry. |
| <b>Practice Problems: Checkup</b><br>25 minutes                                                      | Check your understanding of the lesson.                                                                                                                                                    |

| Lesson and Duration                                                                           | Description                                                                                                                                                                                                            |
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| <b>Induction: The Search for Rules and Patterns: Mastery Test</b><br><i>20 minutes</i>        | Take a quiz to check your understanding of what you have learned.                                                                                                                                                      |
| <b>LESSON 2</b><br><b>Deduction: Making a Case: Lesson Overview</b><br><i>5 minutes</i>       | Read the lesson objectives.                                                                                                                                                                                            |
| <b>Deduction: Making a Case: Study</b><br><i>35 minutes</i>                                   | Learn about the definition of deductive reasoning; postulates and conditional statements; and using deductive reasoning in proofs. Explore a real-world example of deducing that deals with the combination of a lock. |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>                                        | Check your understanding of the lesson.                                                                                                                                                                                |
| <b>Deduction: Making a Case: Mastery Test</b><br><i>20 minutes</i>                            | Take a quiz to check your understanding of what you have learned.                                                                                                                                                      |
| <b>LESSON 3</b><br><b>The Look and Language of Logic: Lesson Overview</b><br><i>5 minutes</i> | Read the lesson objectives.                                                                                                                                                                                            |
| <b>The Look and Language of Logic: Study</b><br><i>35 minutes</i>                             | Explore examples of geometric reasoning. Learn about converses, inverses, and contrapositives of conditional statements.                                                                                               |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>                                        | Check your understanding of the lesson.                                                                                                                                                                                |
| <b>The Look and Language of Logic: Mastery Test</b><br><i>20 minutes</i>                      | Take a quiz to check your understanding of what you have learned.                                                                                                                                                      |
| <b>LESSON 4</b><br><b>Introduction to Proofs: Lesson Overview</b><br><i>5 minutes</i>         | Read the lesson objectives.                                                                                                                                                                                            |

| Lesson and Duration                                                                             | Description                                                                                                                                                                                                                                                |
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| <b>Introduction to Proofs: Study</b><br><i>35 minutes</i>                                       | Learn about postulates and axioms, givens, proof by contradiction (indirect proof), theorems and corollaries, and the axiomatic method.                                                                                                                    |
| <b>Introduction to Proofs: Mastery Test</b><br><i>20 minutes</i>                                | Take a quiz to check your understanding of what you have learned.                                                                                                                                                                                          |
| <b>LESSON 5</b><br><b>Basic Postulates in Geometry: Lesson Overview</b><br><i>5 minutes</i>     | Read the lesson objectives.                                                                                                                                                                                                                                |
| <b>Basic Postulates in Geometry: Study</b><br><i>35 minutes</i>                                 | Learn about the relationship of rays, lines, and angles to direction; the definition of a line; notation for rays and lines; building and defining an angle (including its vertex and sides); conventions for naming angles; and straight and zero angles. |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>                                          | Check your understanding of the lesson.                                                                                                                                                                                                                    |
| <b>Basic Postulates in Geometry: Mastery Test</b><br><i>20 minutes</i>                          | Take a quiz to check your understanding of what you have learned.                                                                                                                                                                                          |
| <b>LESSON 6</b><br><b>Planes and the Space of Geometry: Lesson Overview</b><br><i>5 minutes</i> | Read the lesson objectives.                                                                                                                                                                                                                                |
| <b>Planes and the Space of Geometry: Study</b><br><i>35 minutes</i>                             | Learn about dimensionality, collinear points, two-dimensional objects, the geometric plane, the flat plane, postulate coplanar objects, and three-dimensional objects (solids).                                                                            |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>                                          | Check your understanding of the lesson.                                                                                                                                                                                                                    |
| <b>Planes and the Space of Geometry: Mastery Test</b><br><i>20 minutes</i>                      | Take a quiz to check your understanding of what you have learned.                                                                                                                                                                                          |

| Lesson and Duration                                                                          | Description                                                                                                                                                                                                      |
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| <b>Practice: Modeling: Logo Design</b><br><i>30 minutes</i>                                  | Use your knowledge of location, direction, and angles to model and solve a real-world problem.                                                                                                                   |
| <b>LESSON 7</b><br><b>Intersecting Lines and Proofs: Lesson Overview</b><br><i>5 minutes</i> | Read the lesson objectives.                                                                                                                                                                                      |
| <b>Intersecting Lines and Proofs: Study</b><br><i>35 minutes</i>                             | Learn about intersections that form vertical angles; the vertical angle theorem; perpendicular lines, rays, and segments; distance and length; and perpendicular bisectors.                                      |
| <b>Practice Problems and Proofs: Checkup</b><br><i>25 minutes</i>                            | Check your understanding of the lesson.                                                                                                                                                                          |
| <b>Intersecting Lines and Proofs: Mastery Test</b><br><i>20 minutes</i>                      | Take a quiz to check your understanding of what you have learned.                                                                                                                                                |
| <b>LESSON 8</b><br><b>Parallel Lines and Proofs: Lesson Overview</b><br><i>5 minutes</i>     | Read the lesson objectives.                                                                                                                                                                                      |
| <b>Parallel Lines and Proofs: Study</b><br><i>35 minutes</i>                                 | Learn about skew lines, coplanar lines that do not intersect, parallel line notation, transversals and corresponding angles, alternate interior angles, consecutive interior angles, and parallel line theorems. |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>                                       | Check your understanding of the lesson.                                                                                                                                                                          |
| <b>Parallel Lines and Proofs: Mastery Test</b><br><i>20 minutes</i>                          | Take a quiz to check your understanding of what you have learned.                                                                                                                                                |
| <b>Solving the Mirror Problem: Study</b><br><i>35 minutes</i>                                | Learn about applying theorems from this unit to the problem of measuring light reflected off a mirror. Learn about the law of reflection.                                                                        |

| Lesson and Duration                                                                  | Description                                                                                       |
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| <b>Journal: Consecutive Angle Theorem</b><br><i>30 minutes</i>                       | Use what you know about lines and angles to critique the reasoning of others and prove a theorem. |
| <b>UNIT 1 WRAP-UP</b><br><b>Foundations of Geometry: Review</b><br><i>25 minutes</i> | Check your understanding of the topics in this unit.                                              |
| <b>Posttest: Foundations of Geometry</b><br><i>40 minutes</i>                        | Take a computer-scored test to check what you have learned in this unit.                          |
| <b>Teacher-Graded Posttest: Foundations of Geometry</b><br><i>30 minutes</i>         | Take a teacher-scored test to check what you have learned in this unit.                           |

## UNIT 2: TRIANGLES

| Lesson and Duration                                                                | Description                                                                                                                                                                                          |
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| <b>Pretest: Triangles</b><br><i>40 minutes</i>                                     | Complete the pretest (optional).                                                                                                                                                                     |
| <b>Triangles: Unit Overview</b><br><i>1 minute</i>                                 | Read the unit overview.                                                                                                                                                                              |
| <b>LESSON 1</b><br><b>What Is a Triangle?: Lesson Overview</b><br><i>5 minutes</i> | Read the lesson objectives.                                                                                                                                                                          |
| <b>What Is a Triangle?: Study</b><br><i>35 minutes</i>                             | Learn about the definition and parts of a triangle; opposite and included figures; naming and sorting triangles; equilateral, isosceles, and scalene triangles; and the triangle inequality theorem. |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>                             | Check your understanding of the lesson.                                                                                                                                                              |
| <b>What Is a Triangle?: Mastery Test</b><br><i>20 minutes</i>                      | Take a quiz to check your understanding of what you have learned.                                                                                                                                    |

| Lesson and Duration                                                  | Description                                                                                                                                                                      |
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| <b>LESSON 2</b>                                                      |                                                                                                                                                                                  |
| <b>The Angles of a Triangle: Lesson Overview</b><br><i>5 minutes</i> | Read the lesson objectives.                                                                                                                                                      |
| <b>The Angles of a Triangle: Study</b><br><i>35 minutes</i>          | Explore the angle sum theorem and third angle theorem for triangles. Investigate the relationship between a given triangle's vertex and its exterior and remote interior angles. |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>               | Check your understanding of the lesson.                                                                                                                                          |
| <b>The Angles of a Triangle: Mastery Test</b><br><i>20 minutes</i>   | Take a quiz to check your understanding of what you have learned.                                                                                                                |
| <b>LESSON 3</b>                                                      |                                                                                                                                                                                  |
| <b>Congruence: Lesson Overview</b><br><i>5 minutes</i>               | Read the lesson objectives.                                                                                                                                                      |
| <b>Congruence: Study</b><br><i>35 minutes</i>                        | Learn about congruence, transformations of triangles, corresponding triangles, notation for writing congruence statements, and the CPCTC triangle congruence theorem.            |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>               | Check your understanding of the lesson.                                                                                                                                          |
| <b>Congruence: Mastery Test</b><br><i>20 minutes</i>                 | Take a quiz to check your understanding of what you have learned.                                                                                                                |
| <b>LESSON 4</b>                                                      |                                                                                                                                                                                  |
| <b>Congruence Postulates: Lesson Overview</b><br><i>5 minutes</i>    | Read the lesson objectives.                                                                                                                                                      |
| <b>Congruence Postulates: Study</b><br><i>35 minutes</i>             | Learn about postulates including the SSS, SAS, ASA, and AAS theorems.                                                                                                            |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>               | Check your understanding of the lesson.                                                                                                                                          |
| <b>Congruence Postulates: Mastery Test</b><br><i>20 minutes</i>      | Take a quiz to check your understanding of what you have learned.                                                                                                                |

| Lesson and Duration                                                                                           | Description                                                                                                                                               |
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| <b>LESSON 5</b><br><b>Similar Triangles: Lesson Overview</b><br><i>5 minutes</i>                              | Read the lesson objectives.                                                                                                                               |
| <b>Similar Triangles: Study</b><br><i>35 minutes</i>                                                          | Learn about similarity versus congruence, testing for similarity among triangles, proportionality, the definition of similar triangles, and scale factor. |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>                                                        | Check your understanding of the lesson.                                                                                                                   |
| <b>Similar Triangles: Mastery Test</b><br><i>20 minutes</i>                                                   | Take a quiz to check your understanding of what you have learned.                                                                                         |
| <b>LESSON 6</b><br><b>Similarity Theorems and Proportional Reasoning: Lesson Overview</b><br><i>5 minutes</i> | Read the lesson objectives.                                                                                                                               |
| <b>Similarity Theorems and Proportional Reasoning: Study</b><br><i>35 minutes</i>                             | Learn about the ASA similarity postulate, the SSS similarity theorem, and the SAS similarity theorem.                                                     |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>                                                        | Check your understanding of the lesson.                                                                                                                   |
| <b>Similarity Theorems: Mastery Test</b><br><i>20 minutes</i>                                                 | Take a quiz to check your understanding of what you have learned.                                                                                         |
| <b>Practice: Modeling: Similarity Theorems</b><br><i>30 minutes</i>                                           | Use your knowledge of similarity to model and solve a real-world problem.                                                                                 |
| <b>LESSON 7</b><br><b>Performance Task: Lesson Overview</b><br><i>5 minutes</i>                               | Read the lesson objectives.                                                                                                                               |

| Lesson and Duration                                                      | Description                                                                                                                    |
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| <b>The Parallax Problem: Study</b><br><i>35 minutes</i>                  | Learn to apply the concepts of congruence, similarity, ratio, and proportion to the solution of a real-world parallax problem. |
| <b>Project: Performance Task: The Parallax Problem</b><br><i>2 hours</i> | Apply the concepts of congruence, similarity, ratio, and proportion to solve a real-world problem.                             |
| <b>UNIT 2 WRAP-UP</b>                                                    |                                                                                                                                |
| <b>Triangles: Review</b><br><i>25 minutes</i>                            | Check your understanding of the topics in this unit.                                                                           |
| <b>Posttest: Triangles</b><br><i>40 minutes</i>                          | Take a computer-scored test to check what you have learned in this unit.                                                       |
| <b>Teacher-Graded Posttest: Triangles</b><br><i>30 minutes</i>           | Take a teacher-scored test to check what you have learned in this unit.                                                        |

### UNIT 3: COORDINATE GEOMETRY

| Lesson and Duration                                          | Description                                                                                                                              |
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| <b>Pretest: Coordinate Geometry</b><br><i>40 minutes</i>     | Complete the pretest (optional).                                                                                                         |
| <b>Coordinate Geometry: Unit Overview</b><br><i>1 minute</i> | Read the unit overview.                                                                                                                  |
| <b>LESSON 1</b>                                              |                                                                                                                                          |
| <b>Midpoint Formula: Lesson Overview</b><br><i>5 minutes</i> | Read the lesson objectives.                                                                                                              |
| <b>Midpoint Formula: Study</b><br><i>35 minutes</i>          | Learn about the midpoints of horizontal, vertical, and diagonal line segments and about the midpoint formula. Complete a sample problem. |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>       | Check your understanding of the lesson.                                                                                                  |

| Lesson and Duration                                                                 | Description                                                                                                                                                                                                                                  |
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| <b>Midpoint Formula: Mastery Test</b><br><i>20 minutes</i>                          | Take a quiz to check your understanding of what you have learned.                                                                                                                                                                            |
| <b>LESSON 2</b><br><b>The Distance Formula: Lesson Overview</b><br><i>5 minutes</i> | Read the lesson objectives.                                                                                                                                                                                                                  |
| <b>The Distance Formula: Study</b><br><i>35 minutes</i>                             | Derive the distance formula from the Pythagorean theorem. Use this formula to calculate the distance between any two points. Apply the distance formula in a real-world problem that involves locating the shortest route on a nautical map. |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>                              | Check your understanding of the lesson.                                                                                                                                                                                                      |
| <b>The Distance Formula: Mastery Test</b><br><i>20 minutes</i>                      | Take a quiz to check your understanding of what you have learned.                                                                                                                                                                            |
| <b>Journal: The Distance Formula</b><br><i>30 minutes</i>                           | Use what you know about the midpoint and distance formulas to critique the reasoning of others.                                                                                                                                              |
| <b>LESSON 3</b><br><b>Patterns and Lines: Lesson Overview</b><br><i>5 minutes</i>   | Read the lesson objectives.                                                                                                                                                                                                                  |
| <b>Patterns and Lines: Study</b><br><i>35 minutes</i>                               | Learn about linear equations, ordered pairs, and data points that form a straight line.                                                                                                                                                      |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>                              | Check your understanding of the lesson.                                                                                                                                                                                                      |
| <b>Patterns and Lines: Mastery Test</b><br><i>20 minutes</i>                        | Take a quiz to check your understanding of what you have learned.                                                                                                                                                                            |
| <b>LESSON 4</b><br><b>Slope: Lesson Overview</b><br><i>5 minutes</i>                | Read the lesson objectives.                                                                                                                                                                                                                  |

| Lesson and Duration                                                                                                     | Description                                                                                                                                                 |
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| <b>Slope: Study</b><br><i>35 minutes</i>                                                                                | Learn about measuring slope, rise, and run; the slope formula; negative zero and undefined slope; and measuring the rate of change of a dependent variable. |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>                                                                  | Check your understanding of the lesson.                                                                                                                     |
| <b>Slope: Mastery Test</b><br><i>20 minutes</i>                                                                         | Take a quiz to check your understanding of what you have learned.                                                                                           |
| <b>Practice: Modeling: The Rescue Ship</b><br><i>30 minutes</i>                                                         | Use your knowledge of parallel lines and the slope formula to steer a ship through dangerous waters.                                                        |
| <b>LESSON 5</b><br><b>Equations of Lines: Lesson Overview</b><br><i>5 minutes</i>                                       | Read the lesson objectives.                                                                                                                                 |
| <b>Equations of Lines: Study</b><br><i>35 minutes</i>                                                                   | Learn about and explore examples of properties of lines, the y-intercept, the slope-intercept equation, and the point-slope equation.                       |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>                                                                  | Check your understanding of the lesson.                                                                                                                     |
| <b>Equations of Lines: Mastery Test</b><br><i>20 minutes</i>                                                            | Take a quiz to check your understanding of what you have learned.                                                                                           |
| <b>LESSON 6</b><br><b>Equations of Parallel and Perpendicular Lines and Proofs: Lesson Overview</b><br><i>5 minutes</i> | Read the lesson objectives.                                                                                                                                 |
| <b>Equations of Parallel and Perpendicular Lines and Proofs: Study</b><br><i>35 minutes</i>                             | Learn about the definitions and slopes of parallel and perpendicular lines. Learn about negative reciprocals.                                               |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>                                                                  | Check your understanding of the lesson.                                                                                                                     |

| Lesson and Duration                                                                                        | Description                                                                                                              |
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| <b>Equations of Parallel and Perpendicular Lines and Proofs: Mastery Test</b><br><i>20 minutes</i>         | Take a quiz to check your understanding of what you have learned.                                                        |
| <b>LESSON 7</b><br><b>Coordinate Geometry with Polygons: Lesson Overview</b><br><i>5 minutes</i>           | Read the lesson objectives.                                                                                              |
| <b>Coordinate Geometry with Polygons: Study</b><br><i>35 minutes</i>                                       | Investigate the properties of polygons using coordinate geometry and congruence transformations on the coordinate plane. |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>                                                     | Complete a set of practice problems to hone your calculation skills.                                                     |
| <b>Coordinate Geometry with Polygons: Mastery Test</b><br><i>20 minutes</i>                                | Take a quiz to assess your understanding of the material.                                                                |
| <b>LESSON 8</b><br><b>Area of a Triangle with Coordinate Geometry: Lesson Overview</b><br><i>5 minutes</i> | Read the lesson objectives.                                                                                              |
| <b>Area of a Triangle with Coordinate Geometry: Study</b><br><i>35 minutes</i>                             | Learn about the area of a polygon, square units, and the triangle area formula and theorem.                              |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>                                                     | Check your understanding of the lesson.                                                                                  |
| <b>Area of a Triangle with Coordinate Geometry: Mastery Test</b><br><i>20 minutes</i>                      | Take a quiz to check your understanding of what you have learned.                                                        |

| Lesson and Duration                                                                                                    | Description                                                                                                                                                                                                                                                              |
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| <b>LESSON 9</b><br><b>Area and Perimeter of Polygons with Coordinate Geometry: Lesson Overview</b><br><i>5 minutes</i> | Read the lesson objectives.                                                                                                                                                                                                                                              |
| <b>Area and Perimeter of Polygons with Coordinate Geometry: Study</b><br><i>35 minutes</i>                             | Find the perimeter of any polygon. Determine the areas of irregular polygons by breaking them up into quadrilaterals and regular polygons. Use the apothem formula to find the area of a regular polygon. Complete sample problems about the area of irregular polygons. |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>                                                                 | Check your understanding of the lesson.                                                                                                                                                                                                                                  |
| <b>Area and Perimeter of Polygons with Coordinate Geometry: Mastery Test</b><br><i>20 minutes</i>                      | Take a quiz to check your understanding of what you have learned.                                                                                                                                                                                                        |
| <b>UNIT 3 WRAP-UP</b><br><b>Coordinate Geometry: Review</b><br><i>25 minutes</i>                                       | Check your understanding of the topics in this unit.                                                                                                                                                                                                                     |
| <b>Prepare to Discuss: Graph Paper Puzzles</b><br><i>5 minutes</i>                                                     | Prepare for a discussion.                                                                                                                                                                                                                                                |
| <b>Discuss: Graph Paper Puzzles</b><br><i>20 minutes</i>                                                               | Respond to one of three discussion questions asking you to apply methods learned in this unit.                                                                                                                                                                           |
| <b>Posttest: Coordinate Geometry</b><br><i>40 minutes</i>                                                              | Take a computer-scored test to check what you have learned in this unit.                                                                                                                                                                                                 |
| <b>Teacher-Graded Posttest: Coordinate Geometry</b><br><i>30 minutes</i>                                               | Take a teacher-scored test to check what you have learned in this unit.                                                                                                                                                                                                  |

**UNIT 4: CONSTRUCTIONS AND TRANSFORMATIONS**

| Lesson and Duration                                                                               | Description                                                                                                                                                                                                                       |
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| <b>Pretest: Constructions and Transformations</b><br><i>40 minutes</i>                            | Complete the pretest (optional).                                                                                                                                                                                                  |
| <b>Constructions and Transformations: Unit Overview</b><br><i>1 minute</i>                        | Read the unit overview.                                                                                                                                                                                                           |
| <b>LESSON 1</b><br><b>Constructions: Lesson Overview</b><br><i>5 minutes</i>                      | Read the lesson objectives.                                                                                                                                                                                                       |
| <b>Constructions: Study</b><br><i>35 minutes</i>                                                  | Learn about using a straightedge and a compass, common notions of Euclidean geometry, five postulates, constructing an equilateral triangle and a regular hexagon, bisecting an angle, and constructing a perpendicular bisector. |
| <b>Constructions: Mastery Test</b><br><i>20 minutes</i>                                           | Take a quiz to check your understanding of what you have learned.                                                                                                                                                                 |
| <b>Practice: Modeling: Constructing a Square</b><br><i>30 minutes</i>                             | Use your geometry skills to construct a square using only a straightedge and a compass.                                                                                                                                           |
| <b>LESSON 2</b><br><b>Paper Folding: Lesson Overview</b><br><i>5 minutes</i>                      | Read the lesson objectives.                                                                                                                                                                                                       |
| <b>Paper Folding: Study</b><br><i>35 minutes</i>                                                  | Learn about constructing geometric solids with folding paper, coinciding objects bisecting an angle, and constructing a parallel line segment.                                                                                    |
| <b>Paper Folding: Mastery Test</b><br><i>20 minutes</i>                                           | Take a quiz to check your understanding of what you have learned.                                                                                                                                                                 |
| <b>LESSON 3</b><br><b>Impossible Problems from Antiquity: Lesson Overview</b><br><i>5 minutes</i> | Read the lesson objectives.                                                                                                                                                                                                       |

| Lesson and Duration                                                            | Description                                                                                                                                                                                   |
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| <b>Impossible Problems from Antiquity: Study</b><br><i>35 minutes</i>          | Learn about the Delian problem (doubling a cube) and trisecting an angle.                                                                                                                     |
| <b>Impossible Problems from Antiquity: Mastery Test</b><br><i>20 minutes</i>   | Take a quiz to check your understanding of what you have learned.                                                                                                                             |
| <b>LESSON 4</b><br><b>Transformations: Lesson Overview</b><br><i>5 minutes</i> | Read the lesson objectives.                                                                                                                                                                   |
| <b>Transformations: Study</b><br><i>35 minutes</i>                             | Learn about rigid motions, describe the image and preimage, predict the results of transformations, and use a series of transformations to move figures onto themselves.                      |
| <b>Transformations: Mastery Test</b><br><i>20 minutes</i>                      | Take a quiz to check your understanding of what you have learned.                                                                                                                             |
| <b>Journal: Transformations</b><br><i>30 minutes</i>                           | Critique a conjecture about a series of transformations.                                                                                                                                      |
| <b>LESSON 5</b><br><b>Symmetry: Lesson Overview</b><br><i>5 minutes</i>        | Read the lesson objectives.                                                                                                                                                                   |
| <b>Symmetry: Study</b><br><i>35 minutes</i>                                    | Learn about reflectional symmetry and line of symmetry and explore an example of an isosceles triangle. Learn about rotational symmetry, point of symmetry, and the symmetry of a human face. |
| <b>Symmetry: Mastery Test</b><br><i>20 minutes</i>                             | Take a quiz to check your understanding of what you have learned.                                                                                                                             |
| <b>LESSON 6</b><br><b>Tessellations: Lesson Overview</b><br><i>5 minutes</i>   | Read the lesson objectives.                                                                                                                                                                   |
| <b>Tessellations: Study</b><br><i>35 minutes</i>                               | Learn the definition and explore examples of tessellations. Discover the chessboard as an example of a regular tessellation. Learn about semiregular tessellations.                           |

| Lesson and Duration                                                                            | Description                                                              |
|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| <b>Tessellations: Mastery Test</b><br><i>20 minutes</i>                                        | Take a quiz to check your understanding of what you have learned.        |
| <b>UNIT 4 WRAP-UP</b><br><b>Constructions and Transformations: Review</b><br><i>25 minutes</i> | Check your understanding of the topics in this unit.                     |
| <b>Posttest: Constructions and Transformations</b><br><i>40 minutes</i>                        | Take a computer-scored test to check what you have learned in this unit. |
| <b>Teacher-Graded Posttest: Constructions and Transformations</b><br><i>30 minutes</i>         | Take a teacher-scored test to check what you have learned in this unit.  |

## UNIT 5: DESCRIPTIVE STATISTICS

| Lesson and Duration                                                                          | Description                                                                                                                                                                                                                                                                         |
|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Pretest: Descriptive Statistics</b><br><i>40 minutes</i>                                  | Complete the pretest (optional).                                                                                                                                                                                                                                                    |
| <b>Descriptive Statistics: Unit Overview</b><br><i>1 minute</i>                              | Read the unit overview.                                                                                                                                                                                                                                                             |
| <b>LESSON 1</b><br><b>Measures of Center and Spread: Lesson Overview</b><br><i>5 minutes</i> | Read the lesson objectives.                                                                                                                                                                                                                                                         |
| <b>Measures of Center and Spread: Study</b><br><i>45 minutes</i>                             | Learn how to compute the mean and median of a data set and the effects of outliers on these measures of center. See how to use a calculator to find the standard deviation of a data set, and understand how the standard deviation and the range measure the spread of a data set. |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>                                       | Check your understanding of the lesson.                                                                                                                                                                                                                                             |

| Lesson and Duration                                                                                 | Description                                                                                                                             |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Measures of Center and Spread: Mastery Test</b><br><i>20 minutes</i>                             | Take a quiz to assess your understanding of the material.                                                                               |
| <b>LESSON 2</b><br><b>Dot Plots, Box Plots, and Histograms: Lesson Overview</b><br><i>5 minutes</i> | Read the lesson objectives.                                                                                                             |
| <b>Dot Plots, Box Plots, and Histograms: Study</b><br><i>45 minutes</i>                             | Learn how to construct and interpret stem-and-leaf plots, histograms, and dot plots along with comparative stem-and-leaf and dot plots. |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>                                              | Check your understanding of the lesson.                                                                                                 |
| <b>Dot Plots, Box Plots, and Histograms: Mastery Test</b><br><i>20 minutes</i>                      | Take a quiz to assess your understanding of the material.                                                                               |
| <b>Practice: Modeling: Dot Plots, Box Plots, and Histograms</b><br><i>45 minutes</i>                | Model and solve a real-world problem.                                                                                                   |
| <b>LESSON 3</b><br><b>Describing Distributions: Lesson Overview</b><br><i>5 minutes</i>             | Read the lesson objectives.                                                                                                             |
| <b>Describing Distributions: Study</b><br><i>45 minutes</i>                                         | Learn how to describe distributions using measures of center, shape, and spread for single and comparative data sets.                   |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>                                              | Check your understanding of the lesson.                                                                                                 |
| <b>Describing Distributions: Mastery Test</b><br><i>20 minutes</i>                                  | Take a quiz to assess your understanding of the material.                                                                               |
| <b>Journal: Describing Distributions</b><br><i>45 minutes</i>                                       | Construct arguments and critique the reasoning of others as you write about topics in algebra.                                          |

| Lesson and Duration                                                                     | Description                                                                                                                                                                                                                                                                                               |
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| <b>LESSON 4</b><br><b>Two-Way Frequency Tables: Lesson Overview</b><br><i>5 minutes</i> | Read the lesson objectives.                                                                                                                                                                                                                                                                               |
| <b>Two-Way Frequency Tables: Study</b><br><i>45 minutes</i>                             | Learn how to build and use two-way frequency tables and two-way relative frequency tables. Understand how to find and use joint frequencies and marginal frequencies, and how to calculate conditional relative probabilities from a two-way table. Use two-way tables to recognize associations in data. |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>                                  | Check your understanding of the lesson.                                                                                                                                                                                                                                                                   |
| <b>Two-Way Frequency Tables: Mastery Test</b><br><i>20 minutes</i>                      | Take a quiz to assess your understanding of the material.                                                                                                                                                                                                                                                 |
| <b>UNIT 5 WRAP-UP</b><br><b>Descriptive Statistics: Review</b><br><i>30 minutes</i>     | Check your understanding of the topics in this unit.                                                                                                                                                                                                                                                      |
| <b>Prepare to Discuss: Not All Plots Are Suspicious</b><br><i>5 minutes</i>             | Prepare for a discussion.                                                                                                                                                                                                                                                                                 |
| <b>Discuss: Not All Plots Are Suspicious</b><br><i>40 minutes</i>                       | Join a three- to five-question discussion to practice methods learned in this unit.                                                                                                                                                                                                                       |
| <b>Posttest: Descriptive Statistics</b><br><i>40 minutes</i>                            | Take a computer-scored test to check what you have learned in this unit.                                                                                                                                                                                                                                  |
| <b>Teacher-Graded Posttest: Descriptive Statistics</b><br><i>50 minutes</i>             | Take a teacher-scored test to check what you have learned in this unit.                                                                                                                                                                                                                                   |

## UNIT 6: DATA AND MATHEMATICAL MODELING

| Lesson and Duration                                                                               | Description                                                                                                                                                                                                                                                            |
|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Pretest: Data and Mathematical Modeling</b><br><i>40 minutes</i>                               | Complete the pretest (optional).                                                                                                                                                                                                                                       |
| <b>Data and Mathematical Modeling: Unit Overview</b><br><i>1 minute</i>                           | Read the unit overview.                                                                                                                                                                                                                                                |
| <b>LESSON 1</b><br><b>Two-Variable Data and Scatterplots: Lesson Overview</b><br><i>5 minutes</i> | Read the lesson objectives.                                                                                                                                                                                                                                            |
| <b>Two-Variable Data and Scatterplots: Study</b><br><i>45 minutes</i>                             | Create scatterplots for bivariate data and recognize positive and negative correlations. Use a calculator to find correlation coefficients, and understand what the result says about the strength of the correlation. Know that correlation does not imply causation. |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>                                            | Check your understanding of the lesson.                                                                                                                                                                                                                                |
| <b>Two-Variable Data and Scatterplots: Mastery Test</b><br><i>20 minutes</i>                      | Take a quiz to assess your understanding of the material.                                                                                                                                                                                                              |
| <b>LESSON 2</b><br><b>Fitting Linear Models to Data: Lesson Overview</b><br><i>5 minutes</i>      | Read the lesson objectives.                                                                                                                                                                                                                                            |
| <b>Fitting Linear Models to Data: Study</b><br><i>45 minutes</i>                                  | Find equations for best-fit lines (regression equations) by estimation and by using a calculator. Use regression equations to make predictions. Find residuals and residual plots and understand how they indicate whether or not a linear model is appropriate.       |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>                                            | Check your understanding of the lesson.                                                                                                                                                                                                                                |

| Lesson and Duration                                                                         | Description                                                                                    |
|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| <b>Fitting Linear Models to Data: Mastery Test</b><br><i>20 minutes</i>                     | Take a quiz to assess your understanding of the material.                                      |
| <b>Practice: Modeling: Fitting Linear Models to Data</b><br><i>45 minutes</i>               | Model and solve a real-world problem.                                                          |
| <b>LESSON 3</b><br><b>Nonlinear Models: Lesson Overview</b><br><i>5 minutes</i>             | Read the lesson objectives.                                                                    |
| <b>Nonlinear Models: Study</b><br><i>45 minutes</i>                                         | Learn how to apply nonlinear regression.                                                       |
| <b>Practice Problems: Checkup</b><br><i>25 minutes</i>                                      | Check your understanding of the lesson.                                                        |
| <b>Nonlinear Models: Mastery Test</b><br><i>20 minutes</i>                                  | Take a quiz to assess your understanding of the material.                                      |
| <b>Journal: Nonlinear Models</b><br><i>45 minutes</i>                                       | Construct arguments and critique the reasoning of others as you write about topics in algebra. |
| <b>UNIT 6 WRAP-UP</b><br><b>Data and Mathematical Modeling: Review</b><br><i>30 minutes</i> | Check your understanding of the topics in this unit.                                           |
| <b>Prepare to Discuss: The Latest Model</b><br><i>5 minutes</i>                             | Prepare for a discussion.                                                                      |
| <b>Discuss: The Latest Model</b><br><i>40 minutes</i>                                       | Join a three- to five-question discussion to practice methods learned in this unit.            |
| <b>Posttest: Data and Mathematical Modeling</b><br><i>40 minutes</i>                        | Take a computer-scored test to check what you have learned in this unit.                       |
| <b>Teacher-Graded Posttest: Data and Mathematical Modeling</b><br><i>50 minutes</i>         | Take a teacher-scored test to check what you have learned in this unit.                        |

## SEMESTER WRAP-UP

| Lesson and Duration                                             | Description                                                                                              |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| <b>Semester Review: Review</b><br><i>20 minutes</i>             | Prepare for the final exam by reviewing key concepts and skills.                                         |
| <b>End-of-Semester Test: Semester Exam</b><br><i>50 minutes</i> | Take a computer-scored exam to demonstrate your mastery of concepts and skills covered in this semester. |