

# Using Geometry Common Core as a Resource for engage<sup>ny</sup>

Use the following engage<sup>ny</sup> chart to find correlated *Geometry Common Core* lessons.

| engage <sup>ny</sup><br>Module | engage <sup>ny</sup> Lesson                                           | Geometry Common<br>Core Lesson |
|--------------------------------|-----------------------------------------------------------------------|--------------------------------|
| Module 1                       | <b>Lesson 1</b> Construct an Equilateral Triangle                     | 5.1                            |
|                                | <b>Lesson 2</b> Construct an Equilateral Triangle II                  | 5.1                            |
|                                | <b>Lesson 3</b> Copy and Bisect an Angle                              | 1.1, 6.2                       |
|                                | <b>Lesson 4</b> Construct a Perpendicular Bisector                    | 6.2                            |
|                                | <b>Lesson 5</b> Points of Concurrencies                               | 6.3, 6.5                       |
|                                | <b>Lesson 6</b> Solve for Unknown Angles—Angles and Lines at a Point  | 3.4, 4.1, 4.2                  |
|                                | <b>Lesson 7</b> Solve for Unknown Angles—Transversals                 | 4.1, 4.2, 4.3                  |
|                                | <b>Lesson 8</b> Solve for Unknown Angles—Angles in a Triangle         | 4.5                            |
|                                | <b>Lesson 9</b> Unknown Angle Proofs—Writing Proofs                   | 3.3, 3.4                       |
|                                | <b>Lesson 10</b> Unknown Angle Proofs—Proofs with Constructions       | 4.3, 5.1, 6.2, 8.1, 9.6        |
|                                | <b>Lesson 11</b> Unknown Angle Proofs—Proofs of Known Facts           | 3.3, 3.4, 4.1, 4.2, 4.3, 4.5   |
|                                | <b>Lesson 12</b> Transformations—The Next Level                       | 1.3                            |
|                                | <b>Lesson 13</b> Rotations                                            | 1.3, 1.5, 1.6, 1.7             |
|                                | <b>Lesson 14</b> Reflections                                          | 1.3, 1.6, 1.7                  |
|                                | <b>Lesson 15</b> Rotations, Reflections, and Symmetry                 | 1.6, 1.7                       |
|                                | <b>Lesson 16</b> Translations                                         | 1.3, 1.4, 1.7                  |
|                                | <b>Lesson 17</b> Characterize Points on a Perpendicular Bisector      | 1.6                            |
|                                | <b>Lesson 18</b> Looking More Carefully at Parallel Lines             | 4.1, 4.2                       |
|                                | <b>Lesson 19</b> Construct and Apply a Sequence of Rigid Motions      | 1.7                            |
|                                | <b>Lesson 20</b> Applications of Congruence in Terms of Rigid Motions | 1.7                            |
|                                | <b>Lesson 21</b> Correspondence and Transformations                   | 1.7                            |
|                                | <b>Lesson 22</b> Congruence Criteria for Triangles—SAS                | 5.3                            |
|                                | <b>Lesson 23</b> Base Angles of Isosceles Triangles                   | 5.1                            |
|                                | <b>Lesson 24</b> Congruence Criteria for Triangles—ASA and SSS        | 5.3, 5.4                       |
|                                | <b>Lesson 25</b> Congruence Criteria for Triangles—SAAS and HL        | 5.3, 5.4                       |
|                                | <b>Lesson 26</b> Triangle Congruency Proofs—Part I                    | 5.2, 5.3, 5.4                  |
|                                | <b>Lesson 27</b> Triangle Congruency Proofs—Part II                   | 5.2, 5.3, 5.4                  |
|                                | <b>Lesson 28</b> Properties of Parallelograms                         | 9.1, 9.2, 9.3                  |
|                                | <b>Lessons 29–30</b> Special Lines in Triangles                       | 6.1, 6.4                       |
|                                | <b>Lesson 31</b> Construct a Square and a Nine-Point Circle           | 8.1, 8.3, 9.6                  |

| engage <sup>ny</sup><br>Module | engage <sup>ny</sup> Lesson                                                                                  | Geometry Common<br>Core Lesson                                                                                                        |
|--------------------------------|--------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Module 1                       | <b>Lesson 32</b> Construct a Nine-Point Circle                                                               | 8.1                                                                                                                                   |
|                                | <b>Lessons 33–34</b> Review of the Assumptions                                                               | 1.1, 1.3, 1.4, 1.5, 1.6, 1.7, 3.3, 3.4, 4.1, 4.2, 4.3, 4.5, 5.1, 5.2, 5.3, 5.4, 6.1, 6.2, 6.3, 6.4, 6.5, 8.1, 8.3, 9.1, 9.2, 9.3, 9.6 |
| Module 2                       | <b>Lesson 1</b> Scale Drawings                                                                               | 2.1                                                                                                                                   |
|                                | <b>Lesson 2</b> Making Scale Drawings Using the Ratio Method                                                 | 2.1, 2.2                                                                                                                              |
|                                | <b>Lesson 3</b> Making Scale Drawings Using the Ratio Method                                                 | 2.1, 2.2, 4.3                                                                                                                         |
|                                | <b>Lesson 4</b> Comparing the Ratio Method with the Parallel Method                                          | 2.1, 2.2, 4.3, 7.1                                                                                                                    |
|                                | <b>Lesson 5</b> Scale Factors                                                                                | 2.1                                                                                                                                   |
|                                | <b>Lesson 6</b> Dilations as Transformations of the Plane                                                    | 2.1, 2.2, 2.4, 7.1                                                                                                                    |
|                                | <b>Lesson 7</b> How Do Dilations Map Segments?                                                               | 2.2, 7.1                                                                                                                              |
|                                | <b>Lesson 8</b> How Do Dilations Map Lines, Rays, and Circles?                                               | 2.2, 2.3                                                                                                                              |
|                                | <b>Lesson 9</b> How Do Dilations Map Angles?                                                                 | 2.2, 7.1                                                                                                                              |
|                                | <b>Lesson 10</b> Dividing the King’s Foot into 12 Equal Pieces                                               | 2.2, 7.1                                                                                                                              |
|                                | <b>Lesson 11</b> Dilations From Different Centers                                                            | 2.2                                                                                                                                   |
|                                | <b>Lesson 12</b> What Are Similarity Transformations, and Why Do We Need Them?                               | 2.1, 2.2, 2.3, 2.4                                                                                                                    |
|                                | <b>Lesson 13</b> Properties of Similarity Transformations                                                    | 2.4                                                                                                                                   |
|                                | <b>Lesson 14</b> Similarity                                                                                  | 2.1, 2.2, 2.3, 3.4, 7.1, 7.2                                                                                                          |
|                                | <b>Lesson 15</b> The Angle-Angle (AA) Criterion for Two Triangles to be Similar                              | 7.1                                                                                                                                   |
|                                | <b>Lesson 16</b> Between-Figure and Within-Figure Ratios                                                     | 7.1, 7.2                                                                                                                              |
|                                | <b>Lesson 17</b> The Side-Angle-Side (SAS) and Side-Side-Side (SSS) Criteria for Two Triangles to be Similar | 7.1, 7.2                                                                                                                              |
|                                | <b>Lesson 18</b> Similarity and the Angle Bisector Theorem                                                   | 2.1, 6.2                                                                                                                              |
|                                | <b>Lesson 19</b> Families of Parallel Lines and the Circumference of the Earth                               | 4.1, 4.2                                                                                                                              |
|                                | <b>Lesson 20</b> How Far Away is the Moon?                                                                   | 8.1                                                                                                                                   |
|                                | <b>Lesson 21</b> Special Relationships Within Right Triangles—Dividing into Two Similar Sub-Triangles        | 7.3, 7.4                                                                                                                              |
|                                | <b>Lesson 22</b> Multiplying and Dividing Expressions with Radicals                                          |                                                                                                                                       |
|                                | <b>Lesson 23</b> Adding and Subtracting Expressions with Radicals                                            |                                                                                                                                       |
|                                | <b>Lesson 24</b> Prove the Pythagorean Theorem Using Similarity                                              | 7.3, 7.4, 7.5                                                                                                                         |

| engage <sup>ny</sup><br>Module | engage <sup>ny</sup> Lesson                                                                      | Geometry Common<br>Core Lesson |
|--------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------|
| Module 2                       | <b>Lesson 25</b> Incredibly Useful Ratios                                                        | 7.6                            |
|                                | <b>Lesson 26</b> The Definition of Sine, Cosine, and Tangent                                     | 7.6                            |
|                                | <b>Lesson 27</b> Sine and Cosine of Complementary Angles and Special Angles                      | 7.6                            |
|                                | <b>Lesson 28</b> Solving Problems Using Sine and Cosine                                          | 7.6                            |
|                                | <b>Lesson 29</b> Applying Tangents                                                               | 7.6                            |
|                                | <b>Lesson 30</b> Trigonometry and the Pythagorean Theorem                                        | 7.6, 9.8                       |
|                                | <b>Lesson 31</b> Using Trigonometry to Determine Area                                            | 7.8                            |
|                                | <b>Lesson 32</b> Using Trigonometry to Find Side Lengths of an Acute Triangle                    | 7.8                            |
|                                | <b>Lesson 33</b> Applying Laws of Sines and Cosines                                              | 7.8                            |
|                                | <b>Lesson 34</b> Unknown Angles                                                                  | 7.6, 7.7                       |
| Module 3                       | <b>Lesson 1</b> What is Area?                                                                    | 9.6, 9.7                       |
|                                | <b>Lesson 2</b> Properties of Area                                                               | 9.6, 9.7                       |
|                                | <b>Lesson 3</b> The Scaling Principle for Area                                                   | 2.1, 2.2, 2.3, 9.6, 9.7        |
|                                | <b>Lesson 4</b> Providing the Area of a Disk                                                     | 8.1, 8.3                       |
|                                | <b>Lesson 5</b> Three-Dimensional Space                                                          | 1.1, 1.2                       |
|                                | <b>Lesson 6</b> General Prisms and Cylinders and Their Cross-Sections                            | 10.1                           |
|                                | <b>Lesson 7</b> General Pyramids and Cones and Their Cross-Sections                              | 10.1                           |
|                                | <b>Lesson 8</b> Definition and Properties of Volume                                              | 10.3                           |
|                                | <b>Lesson 9</b> Scaling Principle for Volumes                                                    | 10.3, 10.5                     |
|                                | <b>Lesson 10</b> The Volume of Prisms and Cylinders and Cavalieri's Principle                    | 10.1, 10.3, 10.4               |
|                                | <b>Lesson 11</b> The Volume Formula of a Pyramid and Cone                                        | 10.3                           |
|                                | <b>Lesson 12</b> The Volume Formula of a Sphere                                                  | 10.2, 10.3, 10.4               |
|                                | <b>Lesson 13</b> How Do 3D Printers Work?                                                        | 10.1, 10.4                     |
| Module 4                       | <b>Lesson 1</b> Searching a Region in the Plane                                                  | 1.1, 1.2, 7.3                  |
|                                | <b>Lesson 2</b> Finding Systems of Inequalities That Describe Triangular and Rectangular Regions | 5.4, 6.6                       |
|                                | <b>Lesson 3</b> Lines That Pass Through Regions                                                  | 1.1, 1.2, 4.4                  |
|                                | <b>Lesson 4</b> Designing a Search Robot to Find a Beacon                                        | 1.5, 4.3, 4.4                  |
|                                | <b>Lesson 5</b> Criterion for Perpendicularity                                                   | 4.3, 4.4, 7.3, 7.4             |
|                                | <b>Lesson 6</b> Segments That Meet at Right Angles                                               | 4.3, 4.4, 9.5                  |
|                                | <b>Lesson 7</b> Equations for Lines Using Normal Segments                                        | 4.4                            |

| engage <sup>ny</sup><br>Module | engage <sup>ny</sup> Lesson                                                                   | Geometry Common<br>Core Lesson |
|--------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------|
| Module 4                       | <b>Lesson 8</b> Parallel and Perpendicular Lines                                              | 4.4                            |
|                                | <b>Lesson 9</b> Perimeter and Area of Triangles in the Cartesian Plane                        | 9.6                            |
|                                | <b>Lesson 10</b> Perimeter and Area of Polygonal Regions in the Cartesian Plane               | 9.6                            |
|                                | <b>Lesson 11</b> Perimeters and Areas of Polygonal Regions Defined by Systems of Inequalities | 9.6                            |
|                                | <b>Lesson 12</b> Dividing Segments Proportionately                                            | 1.2                            |
|                                | <b>Lesson 13</b> Analytic Proofs of Theorems Previously Proved by Synthetic Means             | 6.1, 6.4                       |
|                                | <b>Lesson 14</b> Motion Along a Line—Search Robots Again (Optional)                           | 1.2, 4.3, 4.4                  |
|                                | <b>Lesson 15</b> The Distance from a Point to a Line                                          | 4.3, 4.4                       |
| Module 5                       | <b>Lesson 1</b> Thale’s Theorem                                                               | 8.1, 8.2, 8.3                  |
|                                | <b>Lesson 2</b> Circles, Chords, Diameters, and Their Relationships                           | 8.2                            |
|                                | <b>Lesson 3</b> Rectangles Inscribed in Circles                                               | 8.3                            |
|                                | <b>Lesson 4</b> Experiments with Inscribed Angles                                             | 8.2, 8.3                       |
|                                | <b>Lesson 5</b> Inscribed Angle Theorem and Its Application                                   | 8.3                            |
|                                | <b>Lesson 6</b> Unknown Angle Problems with Inscribed Angles in Circles                       | 8.3                            |
|                                | <b>Lesson 7</b> The Angle Measure of an Arc                                                   | 8.2, 8.3                       |
|                                | <b>Lesson 8</b> Arcs and Chords                                                               | 8.2                            |
|                                | <b>Lesson 9</b> Arc Lengths and Areas of Sectors                                              | 8.5                            |
|                                | <b>Lesson 10</b> Unknown Length and Area Problems                                             | 8.1, 8.2, 8.5                  |
|                                | <b>Lesson 11</b> Properties of Tangents                                                       | 8.2, 8.3, 8.4                  |
|                                | <b>Lesson 12</b> Tangent Segments                                                             | 8.1, 8.4                       |
|                                | <b>Lesson 13</b> The Inscribed Angle Alternate a Tangent Angle                                | 8.3, 8.4                       |
|                                | <b>Lesson 14</b> Secant Lines; Secant Lines that Meet Inside a Circle                         | 8.1, 8.3, 8.4                  |
|                                | <b>Lesson 15</b> Secant Angle Theorem, Exterior Case                                          | 8.3, 8.4                       |
|                                | <b>Lesson 16</b> Similar Triangles in a Circle-Secant (or Circle-Secant-Tangent) Diagrams     | 8.3, 8.4                       |
|                                | <b>Lesson 17</b> Writing the Equation for a Circle                                            | 11.1, 11.3                     |
|                                | <b>Lesson 18</b> Recognizing Equations of Circles                                             | 11.3                           |
|                                | <b>Lesson 19</b> Equations for Tangent Lines to Circles                                       | 8.1, 8.4, 11.3                 |
|                                | <b>Lesson 20</b> Cyclic Quadrilaterals                                                        | 8.3                            |
|                                | <b>Lesson 21</b> Ptolemy’s Theorem                                                            | 8.3                            |
| Algebra 2                      | <b>Module 1</b>                                                                               | 11.2                           |
|                                | <b>Module 4</b>                                                                               | 12.1, 12.2, 12.3, 12.4, 12.5   |

## LESSON PLANNING

| Lesson                                 | Student Edition | Standards                 | Digital Lesson | engage <sup>ny</sup> Lessons                              |
|----------------------------------------|-----------------|---------------------------|----------------|-----------------------------------------------------------|
| R.1 Solving Equations                  | pp. 5–9         | A-CED.4; A-REI.3          | Lesson R.1     | Algebra 1 M1 Lessons 5, 10–13, 18, 19                     |
| R.2 Solving Inequalities               | pp. 9–11        | A-REI.3                   | Lesson R.2     | Algebra 1 M1 Lessons 11, 14–16                            |
| R.3 The Slope-Intercept Form of a Line | pp. 11–16       |                           | Lesson R.3     | Grade 8 M4 Lessons 17–21                                  |
| R.4 Solving a System of Equations      | pp. 16–19       | A-REI.5; A-REI.6          | Lesson R.4     | Algebra 1 M1 Lessons 5, 15, 22–24                         |
| R.5 Multiplying Polynomials            | pp. 19–21       | A-APR.1                   | Lesson R.5     | Algebra 1 M1 Lesson 9<br>Algebra 1 M4 Lessons 1–2         |
| R.6 Factoring Polynomials              | pp. 21–23       | A-SSE.2                   | Lesson R.6     | Algebra 1 M1 Lesson 17<br>Algebra 1 M4 Lessons 1–4        |
| R.7 Simplifying Square Roots           | p. 23           |                           | Lesson R.7     | Grade 8 M7 Lessons 2–5                                    |
| R.8 Completing the Square              | pp. 24–25       | A-REI.4a                  | Lesson R.8     | Algebra 1 M4 Lessons 11–13                                |
| R.9 Graphing Parabolas                 | pp. 26–30       | A-APR.3; A-REI.10; F-BF.3 | Lesson R.9     | Algebra 1 M1 Lesson 2<br>Algebra 1 M4 Lessons 8–10, 16–17 |
| R.10 Area and Perimeter Fundamentals   | pp. 30–33       |                           | Lesson R.10    | Grade 4 M3 Lesson 1                                       |
| R.11 Pythagorean Theorem               | pp. 33–35       |                           | Lesson R.11    | Grade 8 M7 Lesson 1                                       |

## Key to the icons:

The computer icon  indicates Digital Activities that can be found at [www.amscomath.com](http://www.amscomath.com).

The globe icon  indicates where Real-World Model Problems are found in the text.

The black diamond icon  (next to the answers in this Teacher Manual) indicates challenge problems.

## LESSON PLANNING

| Lesson                                                                                                                                                                                  | Student Edition | Standards                              | Digital Lesson | engage <sup>ny</sup> Lessons                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------------------|----------------|-------------------------------------------------------|
| 1.1 Geometry Essentials                                                                                                                                                                 | pp. 37–43       | G-CO.1; G-CO.12                        | Lesson 1.1     | M1 Lessons 3, 33–34<br>M3 Lesson 5<br>M4 Lessons 1, 3 |
| 1.2 Measuring Distances                                                                                                                                                                 | pp. 43–50       | G-GPE.6                                | Lesson 1.2     | M3 Lesson 5<br>M4 Lessons 1, 3, 12, 14                |
| 1.3 Transformations and Congruent Figures<br>                                                          | pp. 50–56       | G-CO.5; G-CO.6; G-CO.7                 | Lesson 1.3     | M1 Lessons 12–14, 16, 33–34                           |
| 1.4 Translation in a Coordinate Plane<br>                                                              | pp. 56–61       | G-CO.2; G-CO.5; G-CO.6                 | Lesson 1.4     | M1 Lessons 16, 33–34                                  |
| 1.5 Rotation<br>  | pp. 62–70       | G-CO.2; G-CO.3; G-CO.4; G-CO.5; G-CO.6 | Lesson 1.5     | M1 Lessons 13, 33–34<br>M4 Lesson 4                   |
| 1.6 Reflection, Rotation, and Symmetry<br>                                                           | pp. 70–79       | G-CO.2; G-CO.3; G-CO.4; G-CO.5; G-CO.6 | Lesson 1.6     | M1 Lessons 13–15, 17, 33–34                           |
| 1.7 Composition of Transformations                                                                                                                                                      | pp. 79–84       | G-CO.2; G-CO.4; G-CO.5; G-CO.6         | Lesson 1.7     | M1 Lessons 13–16, 19–21, 33–34                        |

## LESSON PLANNING

| Lesson                                                                                                                                                                                                       | Student Edition | Standards                                    | Digital Lesson | engage <sup>ny</sup> Lessons              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------------------------|----------------|-------------------------------------------|
| 2.1 Similar Figures                                                                                                                                                                                          | pp. 89–92       | G-SRT.5                                      | Lesson 2.1     | M2 Lessons 1–6, 12, 14, 18<br>M3 Lesson 3 |
| 2.2 Dilation and Similar Figures<br>                                                                                        | pp. 93–101      | G-CO.2; G-SRT.1a; G-SRT.1b; G-SRT.2; G-SRT.5 | Lesson 2.2     | M2 Lessons 2–4, 6–12, 14<br>M3 Lesson 3   |
| 2.3 Similarity, Polygons, and Circles<br>  | pp. 102–109     | G-SRT.2; G-SRT.5                             | Lesson 2.3     | M2 Lessons 8, 12, 14<br>M3 Lesson 3       |
| 2.4 Similarity and Transformations                                                                                                                                                                           | pp. 109–112     | G-CO.2; G-CO.5                               | Lesson 2.4     | M2 Lessons 6, 12–13                       |

## LESSON PLANNING

| Lesson                                                                                                                                                                                         | Student Edition | Standards | Digital Lesson | engage <sup>ny</sup> Lessons               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------|----------------|--------------------------------------------|
| 3.1 Inductive Reasoning                                                                                                                                                                        | pp. 119–124     |           | Lesson 3.1     | Optional lesson                            |
| 3.2 Conditional Statements                                                                                                                                                                     | pp. 124–129     |           | Lesson 3.2     | Optional lesson                            |
| 3.3 Deductive Reasoning<br>  | pp. 130–134     | G-CO.9    | Lesson 3.3     | M1 Lessons 9, 11, 33–34                    |
| 3.4 Reasoning in Geometry<br>                                                                                 | pp. 134–143     | G-CO.9    | Lesson 3.4     | M1 Lessons 6, 9, 11, 33–34<br>M2 Lesson 14 |

# Parallel and Perpendicular Lines

## LESSON PLANNING

| Lesson                                                                                                                                                                                                       | Student Edition | Standards       | Digital Lesson | engage <sup>ny</sup> Lessons                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------|----------------|-----------------------------------------------------------------------|
| 4.1 Parallel Lines and Angles<br>                                                                                           | pp. 149–157     | G-CO.1; G-CO.9  | Lesson 4.1     | M1 Lessons 6–7, 11, 18, 33–34<br>M2 Lesson 19                         |
| 4.2 More on Parallel Lines and Angles<br>  | pp. 158–166     | G-CO.9          | Lesson 4.2     | M1 Lessons 6–7, 11, 18, 33–34<br>M2 Lesson 19                         |
| 4.3 Perpendicular Lines                                                                                                                                                                                      | pp. 166–176     | G-CO.9; G-CO.12 | Lesson 4.3     | M1 Lessons 7, 10–11, 33–34<br>M2 Lessons 3–4<br>M4 Lessons 4–6, 14–15 |
| 4.4 Parallel Lines, Perpendicular Lines, and Slope                                                                                                                                                           | pp. 176–182     | G-GPE.5         | Lesson 4.4     | M4 Lessons 3–8, 14–15                                                 |
| 4.5 Parallel Lines and Triangles                                                                                                                                                                             | pp. 182–187     | G-CO.10         | Lesson 4.5     | M1 Lessons 8, 11, 33–34                                               |

## Congruent Triangles

## LESSON PLANNING

| Lesson                                                                                                                                | Student Edition | Standards                        | Digital Lesson | engage <sup>ny</sup> Lessons           |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------------|----------------|----------------------------------------|
| 5.1 Isosceles and Equilateral Triangles                                                                                               | pp. 195–205     | G-CO.10; G-CO.12                 | Lesson 5.1     | M1 Lessons 1–2, 10, 23, 33–34          |
| 5.2 Congruent Figures                                                                                                                 | pp. 205–209     | G-SRT.5                          | Lesson 5.2     | M1 Lessons 26–27, 33–34                |
| 5.3 Proving Triangles Congruent with SSS and SAS                                                                                      | pp. 209–217     | G-CO.10; G-SRT.5                 | Lesson 5.3     | M1 Lessons 22, 24–27, 33–34            |
| 5.4 Proving Triangles Congruent with ASA and AAS<br> | pp. 218–226     | G-CO.7; G-CO.8; G-CO.10; G-SRT.5 | Lesson 5.4     | M1 Lessons 24–27, 33–34<br>M4 Lesson 2 |

# Relationships Within Triangles

## LESSON PLANNING

| Lesson                                                                                                 | Student Edition | Standards                 | Digital Lesson | engage <sup>ny</sup> Lessons              |
|--------------------------------------------------------------------------------------------------------|-----------------|---------------------------|----------------|-------------------------------------------|
| 6.1 Midsegments<br>   | pp. 233–240     | G-CO.10; G-GPE.4          | Lesson 6.1     | M1 Lessons 29, 33–34<br>M4 Lesson 13      |
| 6.2 Perpendicular and Angle Bisectors                                                                  | pp. 240–248     | G-CO.9; G-CO.12; G-SRT.5  | Lesson 6.2     | M1 Lessons 3–4, 10, 33–34<br>M2 Lesson 18 |
| 6.3 Circumcenters<br> | pp. 248–254     | G-C.2; G-CO.3; G-GPE.6    | Lesson 6.3     | M1 Lessons 5, 33–34                       |
| 6.4 Centroids and Orthocenters                                                                         | pp. 254–261     | G-CO.10; G-GPE.4; G-GPE.6 | Lesson 6.4     | M1 Lessons 30, 33–34<br>M4 Lesson 13      |
| 6.5 Incenters                                                                                          | pp. 262–265     | G-C.3                     | Lesson 6.5     | M1 Lessons 5, 33–34                       |
| 6.6 Optional: Inequalities in One Triangle                                                             | pp. 265–270     |                           | Lesson 6.6     | M4 Lesson 2                               |
| 6.7 Optional: Indirect Reasoning                                                                       | pp. 271–275     |                           | Lesson 6.7     | Optional lesson                           |

## LESSON PLANNING

| Lesson                                                                                                                                                                                                         | Student Edition | Standards                      | Digital Lesson | engage <sup>ny</sup> Lessons         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------------------------|----------------|--------------------------------------|
| 7.1 Similarity: Angle-Angle and Side-Side-Side                                                                                                                                                                 | pp. 283–291     | G-SRT.3; G-SRT.5               | Lesson 7.1     | M2 Lessons 4, 6–7, 9–10, 14–17       |
| 7.2 Similar Triangles: Side-Angle-Side Theorem<br>                                                                            | pp. 291–297     | G-SRT.5                        | Lesson 7.2     | M2 Lessons 14, 16–17                 |
| 7.3 Pythagorean Theorem                                                                                                                                                                                        | pp. 298–304     | G-SRT.8                        | Lesson 7.3     | M2 Lessons 21, 24<br>M4 Lessons 1, 5 |
| 7.4 Similar Right Triangles<br>                                                                                               | pp. 304–311     | G-SRT.4; G-SRT.5               | Lesson 7.4     | M2 Lessons 21, 24<br>M4 Lesson 5     |
| 7.5 Special Right Triangles<br>                                                                                             | pp. 312–317     | G-SRT.8                        | Lesson 7.5     | M2 Lesson 24                         |
| 7.6 Trigonometric Ratios<br>             | pp. 317–329     | G-SRT.6; G-SRT.7;<br>G-SRT.8   | Lesson 7.6     | M2 Lessons 25–30, 34                 |
| 7.7 Optional: Inverses of Trigonometric Functions<br>                                                                       | pp. 330–334     |                                | Lesson 7.7     | M2 Lesson 34                         |
| 7.8 Law of Cosines and Law of Sines<br>  | pp. 334–345     | G-SRT.9; G-SRT.10;<br>G-SRT.11 | Lesson 7.8     | M2 Lessons 31–33                     |

## LESSON PLANNING

| Lesson                                                                                                                                                                                                   | Student Edition | Standards                            | Digital Lesson | engage <sup>ny</sup> Lessons                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------------------------------|----------------|-------------------------------------------------------------------------------------|
| 8.1 Circles, Tangents, and Secants<br>                                                                                  | pp. 353–363     | G-CO.1; G-C.2; G-C.3; G-C.4; G-GMD.1 | Lesson 8.1     | M1 Lessons 10, 31–34<br>M2 Lesson 20<br>M3 Lesson 4<br>M5 Lessons 1, 10, 12, 14, 19 |
| 8.2 Chords and Arcs<br>                                                                                                 | pp. 363–370     | G-C.2                                | Lesson 8.2     | M5 Lessons 1–2, 4, 7–8, 10–11                                                       |
| 8.3 Inscribed Figures<br>                                                                                               | pp. 370–380     | G-CO.13; G-C.2; G-C.3                | Lesson 8.3     | M1 Lessons 31, 33–34<br>M3 Lesson 4<br>M5 Lessons 1, 3–7, 11, 13–16, 20–21          |
| 8.4 More on Chords and Angles<br>  | pp. 380–388     | G-C.2                                | Lesson 8.4     | M5 Lessons 11–16, 19                                                                |
| 8.5 Arc Lengths and Area<br>       | pp. 388–398     | G-CO.1; G-C.5                        | Lesson 8.5     | M5 Lessons 9–10                                                                     |

## LESSON PLANNING

| Lesson                                                                                                                                                       | Student Edition | Standards                                      | Digital Lesson | engage <sup>ny</sup> Lessons                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------------------------------|----------------|------------------------------------------------------------------|
| 9.1 Parallelograms and Their Diagonals<br>                                  | pp. 407–417     | G-CO.11; G-GPE.5                               | Lesson 9.1     | M1 Lessons 28, 33–34                                             |
| 9.2 Deciding if a Parallelogram Is Also a Rectangle, Square, or Rhombus<br> | pp. 417–424     | G-CO.11                                        | Lesson 9.2     | M1 Lessons 28, 33–34                                             |
| 9.3 Deciding if a Quadrilateral Is a Parallelogram<br>                     | pp. 425–432     | G-CO.11                                        | Lesson 9.3     | M1 Lessons 28, 33–34                                             |
| 9.4 Optional: Polygons and Their Angles                                                                                                                      | pp. 432–437     |                                                | Lesson 9.4     | Optional lesson                                                  |
| 9.5 Trapezoids and Kites                                                                                                                                     | pp. 437–445     | G-GPE.4                                        | Lesson 9.5     | M4 Lesson 6                                                      |
| 9.6 Areas and the Coordinate Plane                                                                                                                           | pp. 445–456     | G-CO.12; G-GPE.7;<br>G-MG.1; G-MG.2;<br>G-MG.3 | Lesson 9.6     | M1 Lessons 10, 31,<br>33–34<br>M3 Lessons 1–3<br>M4 Lessons 9–11 |
| 9.7 Area of Regular Polygons                                                                                                                                 | pp. 457–461     | G-MG.1                                         | Lesson 9.7     | M3 Lessons 1–3                                                   |
| 9.8 Area and Trigonometry<br>                                             | pp. 461–464     | G-MG.1; G-MG.3;<br>G-SRT.8                     | Lesson 9.8     | M2 Lesson 30                                                     |

## LESSON PLANNING

| Lesson                                                                                                   | Student Edition | Standards                           | Digital Lesson | engage <sup>ny</sup> Lessons |
|----------------------------------------------------------------------------------------------------------|-----------------|-------------------------------------|----------------|------------------------------|
| 10.1 Three-Dimensional Figures, Cross-Sections, and Drawings                                             | pp. 473–482     | G-GMD.4                             | Lesson 10.1    | M3 Lessons 6–7, 10, 13       |
| 10.2 Surface Area<br>   | pp. 483–495     | G-MG.1; G-MG.2;<br>G-MG.3           | Lesson 10.2    | M3 Lesson 12                 |
| 10.3 Volume<br>         | pp. 495–508     | G-GMD.1; G-GMD.3;<br>G-MG.1; G-MG.3 | Lesson 10.3    | M3 Lessons 8–12              |
| 10.4 Cavalieri's Principle                                                                               | pp. 508–513     | G-GMD.2                             | Lesson 10.4    | M3 Lessons 10, 12–13         |
| 10.5 Similar Solids<br> | pp. 513–518     | G-MG.2                              | Lesson 10.5    | M3 Lesson 9                  |

## LESSON PLANNING

| Lesson                                                                                                                                                                                                   | Student Edition | Standards              | Digital Lesson | engage <sup>ny</sup> Lessons |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------|----------------|------------------------------|
| 11.1 Circles at the Origin<br>                                                                                          | pp. 527–531     | G-GMD.4                | Lesson 11.1    | M5 Lesson 17                 |
| 11.2 Parabolas at the Origin<br>       | pp. 531–538     | G-GPE.2; G-GMD.4       | Lesson 11.2    | Algebra 2 M1 Lesson 35       |
| 11.3 Circles Translated from the Origin                                                                                                                                                                  | pp. 538–543     | G-CO.4; G-C.1; G-GPE.1 | Lesson 11.3    | M5 Lessons 17–19             |
| 11.4 Optional: Parabolas Translated from the Origin<br>                                                               | pp. 544–549     |                        | Lesson 11.4    | Optional lesson              |
| 11.5 Ellipses at the Origin<br>    | pp. 550–558     |                        | Lesson 11.5    | Optional lesson              |
| 11.6 Hyperbolas at the Origin<br>  | pp. 558–566     |                        | Lesson 11.6    | Optional lesson              |

## LESSON PLANNING

| Lesson                                                                                                                                                                                                                     | Student Edition | Standards                                      | Digital Lesson | engage <sup>ny</sup> Lessons |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------------------------------|----------------|------------------------------|
| 12.1 Introduction to Probability<br>                     | pp. 575–585     | S-CP.1; S-MD.6; S-MD.7                         | Lesson 12.1    | Algebra 2 M4 Lesson 1        |
| 12.2 Permutations and Combinations                                                                                                                                                                                         | pp. 586–599     | S-CP.9                                         | Lesson 12.2    | Algebra 2 M4 Lessons 1, 5    |
| 12.3 Independent Events and the Multiplication Rule<br>  | pp. 599–605     | S-CP.1; S-CP.2; S-CP.5; S-MD.6; S-MD.7         | Lesson 12.3    | Algebra 2 M4 Lesson 6        |
| 12.4 Addition and Subtraction Rules                                                                                                                                                                                        | pp. 605–613     | S-CP.1; S-CP.7; S-MD.7                         | Lesson 12.4    | Algebra 2 M4 Lesson 7        |
| 12.5 Conditional Probability<br>                                                                                                        | pp. 613–622     | S-CP.3; S-CP.4; S-CP.5; S-CP.6; S-CP.8; S-MD.7 | Lesson 12.5    | Algebra 2 M4 Lessons 2–4     |