

Florida Tutorials are designed specifically for the New Florida Standards for Math and English Language Arts and the Next Generation Sunshine State Standards (NGSSS) for science and social studies to prepare students for the Florida Standards Assessments and the NGSSS End-of-Course (EOC) exams.

Math Tutorials offer targeted instruction, practice and review designed to develop computational fluency, deepen conceptual understanding, and apply mathematical practices. They automatically identify and address learning gaps down to elementary-level content, using adaptive remediation to bring students to grade-level no matter where they start. Students engage with the content in an interactive, feedback-rich environment as they progress through standards-aligned modules. By constantly honing the ability to apply their knowledge in abstract and real world scenarios, students build the depth of knowledge and higher order skills required to demonstrate their mastery when put to the test.

In each module, the Learn It and Try It make complex ideas accessible to students through focused content, modeled logic and process, multi-modal representations, and personalized feedback as students reason through increasingly challenging problems. The Review It offers a high impact summary of key concepts and relates those concepts to students' lives. The Test It assesses students' mastery of the module's concepts, providing granular performance data to students and teachers after each attempt. To help students focus on the content most relevant to them, unit-level pretests and posttests can quickly identify where students are strong and where they're still learning.

## 1. LOGIC

### • **CONDITIONAL STATEMENTS AND SYLLOGISMS**

- **MA.912.LT.4.3** Identify and accurately interpret "if...then," "if and only if," "all" and "not" statements. Find the converse, inverse and contrapositive of a statement.
- **MA.912.LT.4.10** Judge the validity of arguments and give counterexamples to disprove statements.

### • **CONVERSE, INVERSE, AND CONTRAPOSITIVE STATEMENTS**

- **MA.912.LT.4.3** Identify and accurately interpret "if...then," "if and only if," "all" and "not" statements. Find the converse, inverse and contrapositive of a statement.
- **MA.912.LT.4.10** Judge the validity of arguments and give counterexamples to disprove statements.

## 2. POINTS, LINES, AND ANGLES

### • **POINTS, RAYS, LINE SEGMENTS, LINES, AND FIGURES**

- **MA.912.GR.3.3** Use coordinate geometry to solve mathematical and real-world geometric problems involving lines, circles, triangles and quadrilaterals.
- **MA.912.GR.1.1** Prove relationships and theorems about lines and angles. Solve mathematical and real-world problems involving postulates, relationships and theorems of lines and angles.
- **MA.912.GR.6.3** Solve mathematical problems involving triangles and quadrilaterals inscribed in a circle.

### • **PARALLEL AND PERPENDICULAR LINES**

- **MA.912.GR.1.1** Prove relationships and theorems about lines and angles. Solve mathematical and real-world problems involving postulates, relationships and theorems of lines and angles.

### • **PARALLEL LINES AND ANGLE RELATIONSHIPS**

- **MA.912.GR.3.3** Use coordinate geometry to solve mathematical and real-world geometric problems involving lines, circles, triangles and quadrilaterals.
- **MA.912.GR.1.1** Prove relationships and theorems about lines and angles. Solve mathematical and real-world problems involving

*postulates, relationships and theorems of lines and angles.*

- **MA.912.GR.6.3** Solve mathematical problems involving triangles and quadrilaterals inscribed in a circle.
- **MA.912.GR.3.2** Given a mathematical or real-world context, use coordinate geometry to classify or justify definitions, properties and theorems involving circles, triangles or quadrilaterals.

- **PERPENDICULAR BISECTOR AND ANGLE BISECTOR THEOREMS**

- **MA.912.GR.1.1** Prove relationships and theorems about lines and angles. Solve mathematical and real-world problems involving postulates, relationships and theorems of lines and angles.
- **MA.912.GR.1.3** Prove relationships and theorems about triangles. Solve mathematical and real-world problems involving postulates, relationships and theorems of triangles.
- **MA.912.LT.4.10** Judge the validity of arguments and give counterexamples to disprove statements.

### 3. COORDINATE GEOMETRY

- **SLOPE-INTERCEPT FORM OF A LINEAR EQUATION**

- **MA.912.GR.3.3** Use coordinate geometry to solve mathematical and real-world geometric problems involving lines, circles, triangles and quadrilaterals.

- **LENGTH AND THE DISTANCE FORMULA**

- **MA.912.GR.3.3** Use coordinate geometry to solve mathematical and real-world geometric problems involving lines, circles, triangles and quadrilaterals.
- **MA.912.GR.3.4** Use coordinate geometry to solve mathematical and real-world problems on the coordinate plane involving perimeter or area of polygons.
- **MA.912.GR.3.2** Given a mathematical or real-world context, use coordinate geometry to classify or justify definitions, properties and theorems involving circles, triangles or quadrilaterals.

- **MIDPOINT FORMULA ON THE COORDINATE PLANE**

- **MA.912.GR.3.3** Use coordinate geometry to solve mathematical and real-world geometric problems involving lines, circles, triangles and quadrilaterals.
- **MA.912.GR.3.2** Given a mathematical or real-world context, use coordinate geometry to classify or justify definitions, properties and theorems involving circles, triangles or quadrilaterals.

- **CONJECTURES IN COORDINATE GEOMETRY**

- **MA.912.GR.3.3** Use coordinate geometry to solve mathematical and real-world geometric problems involving lines, circles, triangles and quadrilaterals.
- **MA.912.GR.1.3** Prove relationships and theorems about triangles. Solve mathematical and real-world problems involving postulates, relationships and theorems of triangles.
- **MA.912.GR.3.2** Given a mathematical or real-world context, use coordinate geometry to classify or justify definitions, properties and theorems involving circles, triangles or quadrilaterals.

### 4. PERIMETER, AREA, AND TRANSFORMATIONS ON THE COORDINATE PLANE

- **PERIMETER ON THE COORDINATE PLANE**

- **MA.912.GR.3.3** Use coordinate geometry to solve mathematical and real-world geometric problems involving lines, circles, triangles and quadrilaterals.
- **MA.912.GR.3.4** Use coordinate geometry to solve mathematical and real-world problems on the coordinate plane involving perimeter or area of polygons.
- **MA.912.GR.3.2** Given a mathematical or real-world context, use coordinate geometry to classify or justify definitions, properties and theorems involving circles, triangles or quadrilaterals.

- **AREA ON THE COORDINATE PLANE**

- **MA.912.GR.4.4** Solve mathematical and real-world problems involving the area of two-dimensional figures.
- **MA.912.GR.3.3** Use coordinate geometry to solve mathematical and real-world geometric problems involving lines, circles, triangles and quadrilaterals.
- **MA.912.GR.3.4** Use coordinate geometry to solve mathematical and real-world problems on the coordinate plane involving perimeter or area of polygons.
- **MA.912.GR.3.2** Given a mathematical or real-world context, use coordinate geometry to classify or justify definitions, properties and theorems involving circles, triangles or quadrilaterals.

#### • **TRANSFORMATIONS ON THE COORDINATE PLANE**

- **MA.912.GR.1.6** Solve mathematical and real-world problems involving congruence or similarity in two-dimensional figures.
- **MA.912.GR.2.3** Identify a sequence of transformations that will map a given figure onto itself or onto another congruent or similar figure.
- **MA.912.GR.2.5** Given a geometric figure and a sequence of transformations, draw the transformed figure on a coordinate plane.
- **MA.912.GR.2.1** Given a preimage and image, describe the transformation and represent the transformation algebraically using coordinates.
- **MA.912.GR.2.8** Apply an appropriate transformation to map one figure onto another to justify that the two figures are similar.
- **MA.912.GR.2.2** Identify transformations that do or do not preserve distance.
- **MA.912.GR.2.6** Apply rigid transformations to map one figure onto another to justify that the two figures are congruent.

#### • **DILATIONS, TRANSLATIONS, ROTATIONS, AND REFLECTIONS**

- **MA.912.GR.2.3** Identify a sequence of transformations that will map a given figure onto itself or onto another congruent or similar figure.
- **MA.912.GR.2.5** Given a geometric figure and a sequence of transformations, draw the transformed figure on a coordinate plane.
- **MA.912.GR.2.1** Given a preimage and image, describe the transformation and represent the transformation algebraically using coordinates.
- **MA.912.GR.2.8** Apply an appropriate transformation to map one figure onto another to justify that the two figures are similar.
- **MA.912.GR.1.6** Solve mathematical and real-world problems involving congruence or similarity in two-dimensional figures.
- **MA.912.GR.2.6** Apply rigid transformations to map one figure onto another to justify that the two figures are congruent.
- **MA.912.GR.2.2** Identify transformations that do or do not preserve distance.
- **MA.912.GR.4.3** Extend previous understanding of scale drawings and scale factors to determine how dilations affect the area of two-dimensional figures and the surface area or volume of three-dimensional figures.

## 5. CONGRUENCE AND SIMILARITY OF TRIANGLES

#### • **TRIANGLE CONGRUENCE**

- **MA.912.GR.1.6** Solve mathematical and real-world problems involving congruence or similarity in two-dimensional figures.
- **MA.912.GR.1.3** Prove relationships and theorems about triangles. Solve mathematical and real-world problems involving postulates, relationships and theorems of triangles.
- **MA.912.GR.1.2** Prove triangle congruence or similarity using Side-Side-Side, Side-Angle-Side, Angle-Side-Angle, Angle-Angle-Side, Angle-Angle and Hypotenuse-Leg.

#### • **TRIANGLES AND CONGRUENCE TRANSFORMATIONS**

- **MA.912.GR.1.3** Prove relationships and theorems about triangles. Solve mathematical and real-world problems involving postulates, relationships and theorems of triangles.
- **MA.912.GR.2.3** Identify a sequence of transformations that will map a given figure onto itself or onto another congruent or similar figure.
- **MA.912.GR.2.5** Given a geometric figure and a sequence of transformations, draw the transformed figure on a coordinate plane.
- **MA.912.GR.2.6** Apply rigid transformations to map one figure onto another to justify that the two figures are congruent.
- **MA.912.GR.1.6** Solve mathematical and real-world problems involving congruence or similarity in two-dimensional figures.

- **MA.912.GR.1.2** Prove triangle congruence or similarity using Side-Side-Side, Side-Angle-Side, Angle-Side-Angle, Angle-Angle-Side, Angle-Angle and Hypotenuse-Leg.
- **MA.912.GR.2.2** Identify transformations that do or do not preserve distance.
- **MA.912.GR.2.1** Given a preimage and image, describe the transformation and represent the transformation algebraically using coordinates.

## • TRIANGLES AND SIMILARITY TRANSFORMATIONS

- **MA.912.GR.1.6** Solve mathematical and real-world problems involving congruence or similarity in two-dimensional figures.
- **MA.912.GR.1.3** Prove relationships and theorems about triangles. Solve mathematical and real-world problems involving postulates, relationships and theorems of triangles.
- **MA.912.GR.2.3** Identify a sequence of transformations that will map a given figure onto itself or onto another congruent or similar figure.
- **MA.912.GR.2.5** Given a geometric figure and a sequence of transformations, draw the transformed figure on a coordinate plane.
- **MA.912.GR.2.1** Given a preimage and image, describe the transformation and represent the transformation algebraically using coordinates.
- **MA.912.GR.1.2** Prove triangle congruence or similarity using Side-Side-Side, Side-Angle-Side, Angle-Side-Angle, Angle-Angle-Side, Angle-Angle and Hypotenuse-Leg.
- **MA.912.GR.2.8** Apply an appropriate transformation to map one figure onto another to justify that the two figures are similar.
- **MA.912.GR.2.2** Identify transformations that do or do not preserve distance.
- **MA.912.GR.4.3** Extend previous understanding of scale drawings and scale factors to determine how dilations affect the area of two-dimensional figures and the surface area or volume of three-dimensional figures.

## 6. CONGRUENCE AND SIMILARITY OF OTHER POLYGONS

### • CONGRUENCE OF OTHER POLYGONS

- **MA.912.GR.1.6** Solve mathematical and real-world problems involving congruence or similarity in two-dimensional figures.
- **MA.912.GR.2.3** Identify a sequence of transformations that will map a given figure onto itself or onto another congruent or similar figure.
- **MA.912.GR.2.1** Given a preimage and image, describe the transformation and represent the transformation algebraically using coordinates.
- **MA.912.GR.2.6** Apply rigid transformations to map one figure onto another to justify that the two figures are congruent.
- **MA.912.GR.1.4** Prove relationships and theorems about parallelograms. Solve mathematical and real-world problems involving postulates, relationships and theorems of parallelograms.
- **MA.912.GR.2.5** Given a geometric figure and a sequence of transformations, draw the transformed figure on a coordinate plane.
- **MA.912.GR.3.2** Given a mathematical or real-world context, use coordinate geometry to classify or justify definitions, properties and theorems involving circles, triangles or quadrilaterals.
- **MA.912.GR.2.2** Identify transformations that do or do not preserve distance.

### • SIMILARITY OF OTHER POLYGONS

- **MA.912.GR.6.3** Solve mathematical problems involving triangles and quadrilaterals inscribed in a circle.
- **MA.912.GR.1.6** Solve mathematical and real-world problems involving congruence or similarity in two-dimensional figures.
- **MA.912.GR.4.3** Extend previous understanding of scale drawings and scale factors to determine how dilations affect the area of two-dimensional figures and the surface area or volume of three-dimensional figures.
- **MA.912.GR.2.3** Identify a sequence of transformations that will map a given figure onto itself or onto another congruent or similar figure.
- **MA.912.GR.2.8** Apply an appropriate transformation to map one figure onto another to justify that the two figures are similar.
- **MA.912.GR.2.2** Identify transformations that do or do not preserve distance.

## 7. TRIANGLES

### • CLASSIFYING TRIANGLES

- **MA.912.GR.1.3** Prove relationships and theorems about triangles. Solve mathematical and real-world problems involving postulates, relationships and theorems of triangles.
- **MA.912.GR.6.3** Solve mathematical problems involving triangles and quadrilaterals inscribed in a circle.

#### • TRIANGLE ANGLE THEOREMS

- **MA.912.GR.1.3** Prove relationships and theorems about triangles. Solve mathematical and real-world problems involving postulates, relationships and theorems of triangles.

#### • TRIANGLE BISECTORS

- **MA.912.GR.1.1** Prove relationships and theorems about lines and angles. Solve mathematical and real-world problems involving postulates, relationships and theorems of lines and angles.
- **MA.912.GR.1.3** Prove relationships and theorems about triangles. Solve mathematical and real-world problems involving postulates, relationships and theorems of triangles.
- **MA.912.GR.6.3** Solve mathematical problems involving triangles and quadrilaterals inscribed in a circle.
- **MA.912.GR.5.3** Construct the inscribed and circumscribed circles of a triangle.

#### • MEDIANS AND ALTITUDES OF TRIANGLES

- **MA.912.GR.3.3** Use coordinate geometry to solve mathematical and real-world geometric problems involving lines, circles, triangles and quadrilaterals.
- **MA.912.GR.1.3** Prove relationships and theorems about triangles. Solve mathematical and real-world problems involving postulates, relationships and theorems of triangles.

## 8. QUADRILATERALS AND CONSTRUCTIONS

#### • PARALLELOGRAMS AND RECTANGLES

- **MA.912.GR.1.4** Prove relationships and theorems about parallelograms. Solve mathematical and real-world problems involving postulates, relationships and theorems of parallelograms.

#### • SQUARES AND RHOMBI

- **MA.912.GR.1.4** Prove relationships and theorems about parallelograms. Solve mathematical and real-world problems involving postulates, relationships and theorems of parallelograms.

#### • TRAPEZOIDS

- **MA.912.GR.1.5** Prove relationships and theorems about trapezoids. Solve mathematical and real-world problems involving postulates, relationships and theorems of trapezoids.
- **MA.912.GR.6.3** Solve mathematical problems involving triangles and quadrilaterals inscribed in a circle.

#### • CONSTRUCTIONS

- **MA.912.GR.5.2** Construct the bisector of a segment or an angle, including the perpendicular bisector of a line segment.
- **MA.912.GR.5.1** Construct a copy of a segment or an angle.
- **MA.912.GR.1.2** Prove triangle congruence or similarity using Side-Side-Side, Side-Angle-Side, Angle-Side-Angle, Angle-Angle-Side, Angle-Angle and Hypotenuse-Leg.

## 9. TRIANGLES AND TRIGONOMETRY

#### • PYTHAGOREAN THEOREM

- **MA.912.T.1.2** Solve mathematical and real-world problems involving right triangles using trigonometric ratios and the Pythagorean Theorem.
- **MA.912.GR.1.3** Prove relationships and theorems about triangles. Solve mathematical and real-world problems involving postulates, relationships and theorems of triangles.

- **TRIGONOMETRIC RATIOS**

- **MA.912.T.1.1** Define trigonometric ratios for acute angles in right triangles.
- **MA.912.T.1.2** Solve mathematical and real-world problems involving right triangles using trigonometric ratios and the Pythagorean Theorem.

- **RADIANS AND THE UNIT CIRCLE**

- **MA.912.GR.6.4** Solve mathematical and real-world problems involving the arc length and area of a sector in a given circle.
- **MA.912.T.1.1** Define trigonometric ratios for acute angles in right triangles.
- **MA.912.T.1.2** Solve mathematical and real-world problems involving right triangles using trigonometric ratios and the Pythagorean Theorem.

## 10. CIRCLES

- **CIRCLE BASICS**

- **MA.912.GR.6.2** Solve mathematical and real-world problems involving the measures of arcs and related angles.
- **MA.912.GR.6.1** Solve mathematical and real-world problems involving the length of a secant, tangent, segment or chord in a given circle.

- **CENTRAL ANGLES, INSCRIBED ANGLES, AND CHORDS**

- **MA.912.GR.1.1** Prove relationships and theorems about lines and angles. Solve mathematical and real-world problems involving postulates, relationships and theorems of lines and angles.
- **MA.912.GR.6.3** Solve mathematical problems involving triangles and quadrilaterals inscribed in a circle.
- **MA.912.GR.6.2** Solve mathematical and real-world problems involving the measures of arcs and related angles.
- **MA.912.GR.6.4** Solve mathematical and real-world problems involving the arc length and area of a sector in a given circle.

- **SECANTS, ANGLES, AND INTERCEPTED ARCS**

- **MA.912.GR.6.2** Solve mathematical and real-world problems involving the measures of arcs and related angles.
- **MA.912.GR.6.1** Solve mathematical and real-world problems involving the length of a secant, tangent, segment or chord in a given circle.
- **MA.912.GR.1.1** Prove relationships and theorems about lines and angles. Solve mathematical and real-world problems involving postulates, relationships and theorems of lines and angles.
- **MA.912.GR.6.3** Solve mathematical problems involving triangles and quadrilaterals inscribed in a circle.
- **MA.912.GR.6.4** Solve mathematical and real-world problems involving the arc length and area of a sector in a given circle.

- **TANGENTS, ANGLES, AND INTERCEPTED ARCS**

- **MA.912.GR.3.3** Use coordinate geometry to solve mathematical and real-world geometric problems involving lines, circles, triangles and quadrilaterals.
- **MA.912.GR.1.1** Prove relationships and theorems about lines and angles. Solve mathematical and real-world problems involving postulates, relationships and theorems of lines and angles.
- **MA.912.GR.6.2** Solve mathematical and real-world problems involving the measures of arcs and related angles.
- **MA.912.GR.6.4** Solve mathematical and real-world problems involving the arc length and area of a sector in a given circle.
- **MA.912.GR.6.1** Solve mathematical and real-world problems involving the length of a secant, tangent, segment or chord in a given circle.
- **MA.912.GR.3.2** Given a mathematical or real-world context, use coordinate geometry to classify or justify definitions, properties and theorems involving circles, triangles or quadrilaterals.
- **MA.912.GR.6.3** Solve mathematical problems involving triangles and quadrilaterals inscribed in a circle.

## 11. PROPERTIES OF CIRCLES

- **CONGRUENT AND SIMILAR CIRCLES**



- **MA.912.GR.1.6** Solve mathematical and real-world problems involving congruence or similarity in two-dimensional figures.
- **MA.912.GR.3.3** Use coordinate geometry to solve mathematical and real-world geometric problems involving lines, circles, triangles and quadrilaterals.
- **MA.912.GR.2.3** Identify a sequence of transformations that will map a given figure onto itself or onto another congruent or similar figure.
- **MA.912.GR.2.5** Given a geometric figure and a sequence of transformations, draw the transformed figure on a coordinate plane.
- **MA.912.GR.2.1** Given a preimage and image, describe the transformation and represent the transformation algebraically using coordinates.
- **MA.912.GR.2.6** Apply rigid transformations to map one figure onto another to justify that the two figures are congruent.
- **MA.912.GR.3.2** Given a mathematical or real-world context, use coordinate geometry to classify or justify definitions, properties and theorems involving circles, triangles or quadrilaterals.
- **MA.912.GR.2.8** Apply an appropriate transformation to map one figure onto another to justify that the two figures are similar.
- **MA.912.GR.2.2** Identify transformations that do or do not preserve distance.

#### ● **CIRCUMFERENCE AND ARC LENGTH**

- **MA.912.GR.3.3** Use coordinate geometry to solve mathematical and real-world geometric problems involving lines, circles, triangles and quadrilaterals.
- **MA.912.GR.3.2** Given a mathematical or real-world context, use coordinate geometry to classify or justify definitions, properties and theorems involving circles, triangles or quadrilaterals.
- **MA.912.GR.6.4** Solve mathematical and real-world problems involving the arc length and area of a sector in a given circle.

#### ● **AREA OF CIRCLES AND SECTORS**

- **MA.912.GR.4.4** Solve mathematical and real-world problems involving the area of two-dimensional figures.
- **MA.912.GR.6.4** Solve mathematical and real-world problems involving the arc length and area of a sector in a given circle.

#### ● **CIRCLES**

- **MA.912.GR.4.1** Identify the shapes of two-dimensional cross-sections of three-dimensional figures.
- **MA.912.GR.7.3** Graph and solve mathematical and real-world problems that are modeled with an equation of a circle. Determine and interpret key features in terms of the context.
- **MA.912.GR.7.2** Given a mathematical or real-world context, derive and create the equation of a circle using key features.

## 12. SURFACE AREA

#### ● **SURFACE AREA AND VOLUME OF SPHERES**

- **MA.912.GR.4.5** Solve mathematical and real-world problems involving the volume of three-dimensional figures limited to cylinders, pyramids, prisms, cones and spheres.
- **MA.912.GR.4.1** Identify the shapes of two-dimensional cross-sections of three-dimensional figures.
- **MA.912.GR.4.6** Solve mathematical and real-world problems involving the surface area of three-dimensional figures limited to cylinders, pyramids, prisms, cones and spheres.
- **MA.912.GR.4.4** Solve mathematical and real-world problems involving the area of two-dimensional figures.

#### ● **RELATING TWO-DIMENSIONAL FIGURES TO THREE-DIMENSIONAL SOLIDS**

- **MA.912.GR.4.1** Identify the shapes of two-dimensional cross-sections of three-dimensional figures.
- **MA.912.GR.4.6** Solve mathematical and real-world problems involving the surface area of three-dimensional figures limited to cylinders, pyramids, prisms, cones and spheres.
- **MA.912.GR.4.2** Identify three-dimensional objects generated by rotations of two-dimensional figures.

#### ● **SURFACE AREA OF COMPOSITE SOLIDS**

- **MA.912.GR.4.6** Solve mathematical and real-world problems involving the surface area of three-dimensional figures limited to cylinders, pyramids, prisms, cones and spheres.

## 13. VOLUME

- **VOLUME OF PRISMS AND PYRAMIDS**

- **MA.912.GR.4.5** Solve mathematical and real-world problems involving the volume of three-dimensional figures limited to cylinders, pyramids, prisms, cones and spheres.
- **MA.912.GR.6.3** Solve mathematical problems involving triangles and quadrilaterals inscribed in a circle.

- **VOLUME OF CYLINDERS AND CONES**

- **MA.912.GR.4.5** Solve mathematical and real-world problems involving the volume of three-dimensional figures limited to cylinders, pyramids, prisms, cones and spheres.
- **MA.912.GR.6.3** Solve mathematical problems involving triangles and quadrilaterals inscribed in a circle.

- **VOLUME OF COMPOSITE SOLIDS**

- **MA.912.GR.4.5** Solve mathematical and real-world problems involving the volume of three-dimensional figures limited to cylinders, pyramids, prisms, cones and spheres.
- **MA.912.GR.6.3** Solve mathematical problems involving triangles and quadrilaterals inscribed in a circle.

- **MODELING SITUATIONS WITH GEOMETRY**

- **MA.912.GR.4.4** Solve mathematical and real-world problems involving the area of two-dimensional figures.
- **MA.912.GR.4.5** Solve mathematical and real-world problems involving the volume of three-dimensional figures limited to cylinders, pyramids, prisms, cones and spheres.