

Maryland Tutorials are designed specifically for the Maryland College and Career-Ready Standards to prepare students for the PARCC assessment, the Maryland School Assessment (MSA), and the Maryland High School Assessment (HSA).

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. POINTS, LINES, AND FIGURES

- **POINTS, RAYS, LINE SEGMENTS, LINES, AND FIGURES**
 - **G.CO.1.A** Ability to fluently use mathematical vocabulary accurately
- **PARALLEL AND PERPENDICULAR LINES**
 - **G.CO.1.A** Ability to fluently use mathematical vocabulary accurately
 - **G.GPE.5.A** See the skills and knowledge that are stated in the Standard.

2. LINES AND ANGLES

- **PARALLEL LINES AND ANGLE RELATIONSHIPS**
 - **G.CO.9.A** Ability to construct a proof using one of a variety of methods
 - **G.CO.1.A** Ability to fluently use mathematical vocabulary accurately
- **PERPENDICULAR BISECTOR AND ANGLE BISECTOR THEOREMS**
 - **G.CO.1.A** Ability to fluently use mathematical vocabulary accurately
 - **G.CO.9.A** Ability to construct a proof using one of a variety of methods
 - **G.CO.10.A** Ability to construct a proof using one of a variety of methods
 - **G.SRT.4.A** Ability to construct a proof using one of a variety of methods

3. TRIANGLES

- **TRIANGLE ANGLE THEOREMS**
 - **G.CO.10.A** Ability to construct a proof using one of a variety of methods
 - **G.SRT.4.A** Ability to construct a proof using one of a variety of methods
- **TRIANGLE BISECTORS**
 - **G.CO.9.A** Ability to construct a proof using one of a variety of methods

- **G.CO.10.A** Ability to construct a proof using one of a variety of methods
- **G.SRT.4.A** Ability to construct a proof using one of a variety of methods
- **G.SRT.5.A** Ability to use information given in verbal or pictorial form about geometric figures to set up a proportion that accurately models the situation

- **MEDIANS AND ALTIITUDES OF TRIANGLES**

- **G.CO.10.A** Ability to construct a proof using one of a variety of methods
- **G.SRT.4.A** Ability to construct a proof using one of a variety of methods

4. QUADRILATERALS AND CONSTRUCTIONS

- **PARALLELOGRAMS AND RECTANGLES**

- **G.CO.11.A** Ability to construct a proof using one of a variety of methods

- **SQUARES AND RHOMBI**

- **G.CO.11.A** Ability to construct a proof using one of a variety of methods

- **CONSTRUCTIONS**

- **G.C.4.A** See the skills and knowledge that are stated in the Standard.
- **G.CO.12.A** Ability to use understanding of geometric concepts to establish a rationale for the steps/procedures used in completing a construction
- **G.CO.13.A** Ability to use understanding of geometric concepts to establish a rationale for the steps/procedures used in completing a construction

5. GEOMETRIC TRANSFORMATIONS

- **TRANSFORMATIONS ON THE COORDINATE PLANE**

- **G.CO.2.B** Knowledge that rigid transformations preserve the shape of a figure
- **G.CO.3.A** Ability to use appropriate vocabulary to describe rotations and reflections
- **G.CO.4.A** Ability to construct a definition for each term based upon a synthesis of experiences
- **G.CO.5.B** Ability to accurately use geometric vocabulary to describe the sequence of transformations that will carry a given figure onto another
- **G.CO.6.C** Ability to use the definition of congruence as a test to see if two figures are congruent
- **G.SRT.1.b.1** Ability to develop a hypothesis based on observations
- **G.CO.5.A** Ability to interpret and perform a given sequence of transformations and draw the result
- **G.SRT.2.A** Ability to make connections between the definition of similarity and the attributes of two given figures

- **DILATIONS, TRANSLATIONS, ROTATIONS, AND REFLECTIONS**

- **G.CO.3.A** Ability to use appropriate vocabulary to describe rotations and reflections
- **G.CO.5.B** Ability to accurately use geometric vocabulary to describe the sequence of transformations that will carry a given figure onto another
- **G.CO.3.B** Ability to use the characteristics of a figure to determine and then describe what happens to the figure as it is rotated (such as axis of symmetry, congruent angles or sides....)
- **G.CO.4.A** Ability to construct a definition for each term based upon a synthesis of experiences
- **G.CO.5.A** Ability to interpret and perform a given sequence of transformations and draw the result
- **G.CO.6.C** Ability to use the definition of congruence as a test to see if two figures are congruent
- **G.SRT.1.a.1** Ability to connect experiences with dilations and orientation to experiences with lines
- **G.SRT.1.b.1** Ability to develop a hypothesis based on observations
- **G.SRT.2.A** Ability to make connections between the definition of similarity and the attributes of two given figures
- **G.CO.2.B** Knowledge that rigid transformations preserve the shape of a figure

6. INTRODUCTION TO CONGRUENCE

• TRIANGLES AND CONGRUENCE TRANSFORMATIONS

- **G.CO.8.A** Ability to recognize why particular combinations of corresponding parts establish congruence and why others do not
- **G.CO.6.C** Ability to use the definition of congruence as a test to see if two figures are congruent
- **G.CO.10.A** Ability to construct a proof using one of a variety of methods
- **G.SRT.4.A** Ability to construct a proof using one of a variety of methods
- **G.CO.3.A** Ability to use appropriate vocabulary to describe rotations and reflections
- **G.CO.3.B** Ability to use the characteristics of a figure to determine and then describe what happens to the figure as it is rotated (such as axis of symmetry, congruent angles or sides....)
- **G.CO.6.A** Ability to recognize the effects of rigid motion on orientation and location of a figure
- **G.CO.6.B** Ability to use rigid motions to map one figure onto another
- **G.CO.7.A** Knowledge of vocabulary corresponding parts and the connection to the given triangles
- **G.CO.7.B** Ability to identify the corresponding parts of two triangles

• CONGRUENCE OF OTHER POLYGONS

- **G.CO.6.C** Ability to use the definition of congruence as a test to see if two figures are congruent
- **G.CO.2.B** Knowledge that rigid transformations preserve the shape of a figure
- **G.CO.3.A** Ability to use appropriate vocabulary to describe rotations and reflections
- **G.CO.5.A** Ability to interpret and perform a given sequence of transformations and draw the result
- **G.CO.5.B** Ability to accurately use geometric vocabulary to describe the sequence of transformations that will carry a given figure onto another
- **G.CO.6.A** Ability to recognize the effects of rigid motion on orientation and location of a figure
- **G.CO.6.B** Ability to use rigid motions to map one figure onto another

7. INTRODUCTION TO SIMILARITY

• TRIANGLES AND SIMILARITY TRANSFORMATIONS

- **G.CO.10.A** Ability to construct a proof using one of a variety of methods
- **G.SRT.2.A** Ability to make connections between the definition of similarity and the attributes of two given figures
- **G.SRT.3.A** Ability to recognize why particular combinations of corresponding parts establish similarity and why others do not
- **G.SRT.4.A** Ability to construct a proof using one of a variety of methods
- **G.SRT.2.B** Ability to set up and use appropriate ratios and proportions
- **G.SRT.5.A** Ability to use information given in verbal or pictorial form about geometric figures to set up a proportion that accurately models the situation

• SIMILARITY OF OTHER POLYGONS

- **G.SRT.2.A** Ability to make connections between the definition of similarity and the attributes of two given figures
- **G.SRT.2.B** Ability to set up and use appropriate ratios and proportions
- **G.SRT.5.A** Ability to use information given in verbal or pictorial form about geometric figures to set up a proportion that accurately models the situation

8. TRIANGLES AND TRIGONOMETRY

• PYTHAGOREAN THEOREM

- **G.CO.10.A** Ability to construct a proof using one of a variety of methods
- **G.SRT.8.A** See the skills and knowledge that are stated in the Standard.
- **G.SRT.4.A** Ability to construct a proof using one of a variety of methods

• TRIGONOMETRIC RATIOS

- **G.SRT.7.A** See the skills and knowledge that are stated in the Standard.

- **G.SRT.6.A** Ability to generalize that side ratios from similar triangles are equal and that these relationships lead to the definition of the six trigonometric ratios
- **G.SRT.8.A** See the skills and knowledge that are stated in the Standard.

9. APPLICATIONS OF TRIGONOMETRY

● LAWS OF SINE AND COSINE

- **G.SRT.9.A** Ability to make connections between the formula $A = \frac{1}{2}(\text{base})(\text{height})$ and right triangle trigonometry
- **G.SRT.10.A** Ability to recognize when it is appropriate to use the Law of Sines and the Law of Cosines
- **G.SRT.11.A** See the skills and knowledge that are stated in the Standard.

● RADIANS AND THE UNIT CIRCLE

- **G.C.5.A** See the skills and knowledge that are stated in the Standard.
- **G.SRT.8.A** See the skills and knowledge that are stated in the Standard.

10. CIRCLES I

● CIRCLE BASICS

- **G.CO.1.A** Ability to fluently use mathematical vocabulary accurately
- **G.C.2.A** See the skills and knowledge that are stated in the Standard.

● CENTRAL ANGLES, INSCRIBED ANGLES, AND CHORDS

- **G.CO.9.A** Ability to construct a proof using one of a variety of methods
- **G.C.2.A** See the skills and knowledge that are stated in the Standard.

11. CIRCLES II

● SECANTS, ANGLES, AND INTERCEPTED ARCS

- **G.CO.9.A** Ability to construct a proof using one of a variety of methods
- **G.C.2.A** See the skills and knowledge that are stated in the Standard.

● TANGENTS, ANGLES, AND INTERCEPTED ARCS

- **G.CO.9.A** Ability to construct a proof using one of a variety of methods
- **G.C.2.A** See the skills and knowledge that are stated in the Standard.

12. MEASURING CIRCLES

● CIRCUMFERENCE AND ARC LENGTH

- **G.GMD.1.A** See the skills and knowledge that are stated in the Standard.
- **G.MG.1.A** Ability to connect experiences with this standard as it related to the two- dimensional shapes studied in Unit 2 to three-dimensional shapes

● AREA OF CIRCLES AND SECTORS

- **G.C.5.A** See the skills and knowledge that are stated in the Standard.
- **G.MG.1.A** Ability to connect experiences with this standard as it related to the two- dimensional shapes studied in Unit 2 to three-dimensional shapes
- **G.GMD.1.A** See the skills and knowledge that are stated in the Standard.

13. PROPERTIES OF CIRCLES

● CONGRUENT AND SIMILAR CIRCLES

- **G.C.1.A** See the skills and knowledge that are stated in the Standard.
- **G.SRT.2.A** Ability to make connections between the definition of similarity and the attributes of two given figures
- **G.CO.4.A** Ability to construct a definition for each term based upon a synthesis of experiences
- **G.CO.6.C** Ability to use the definition of congruence as a test to see if two figures are congruent
- **G.GPE.4.A** Ability to connect experience with coordinate proofs from Unit 4 to circles

- **CIRCLES**

- **G.CO.1.A** Ability to fluently use mathematical vocabulary accurately
- **G.GPE.1.A** See the skills and knowledge that are stated in the Standard.

14. LINES IN THE COORDINATE PLANE

- **SLOPE**

- **G.GPE.4.A** Ability to connect experience with coordinate proofs from Unit 4 to circles
- **G.GPE.6.A** Ability to use the slope formula
- **G.GPE.5.A** See the skills and knowledge that are stated in the Standard.

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

- **G.CO.1.A** Ability to fluently use mathematical vocabulary accurately
- **G.GPE.5.A** See the skills and knowledge that are stated in the Standard.

15. COORDINATE GEOMETRY

- **LENGTH AND THE DISTANCE FORMULA**

- **G.GPE.4.A** Ability to use distance, slope and midpoint formulas
- **G.GPE.7.A** See the skills and knowledge that are stated in the Standard.

- **MIDPOINT FORMULA ON THE COORDINATE PLANE**

- **G.GPE.4.A** Ability to use distance, slope and midpoint formulas

- **CONJECTURES IN COORDINATE GEOMETRY**

- **G.CO.10.A** Ability to construct a proof using one of a variety of methods
- **G.GPE.4.A** Ability to connect experience with coordinate proofs from Unit 4 to circles

16. PERIMETER AND AREA

- **PERIMETER ON THE COORDINATE PLANE**

- **G.GPE.7.A** See the skills and knowledge that are stated in the Standard.
- **G.MG.1.A** Ability to connect experiences from Unit 2 and Unit 3 with two-dimensional and three-dimensional shapes to circles

- **AREA ON THE COORDINATE PLANE**

- **G.GPE.4.A** Ability to use distance, slope and midpoint formulas
- **G.MG.1.A** Ability to connect experiences with this standard as it related to the two-dimensional shapes studied in Unit 2 to three-dimensional shapes
- **G.GPE.7.A** See the skills and knowledge that are stated in the Standard.

17. THREE-DIMENSIONAL FIGURES I

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

- **G.GMD.4.A** Ability to make connections between two-dimensional figures such as rectangles, squares, circles, and triangles

and three-dimensional figures such as cylinders, spheres, pyramids and cones

- **G.GPE.7.A** See the skills and knowledge that are stated in the Standard.
- **G.MG.1.A** Ability to connect experiences from Unit 2 and Unit 3 with two-dimensional and three-dimensional shapes to circles

- **VOLUME OF PRISMS AND PYRAMIDS**

- **G.GMD.3.A** See the skills and knowledge that are stated in the Standard.
- **G.GMD.4.A** Ability to make connections between two-dimensional figures such as rectangles, squares, circles, and triangles and three-dimensional figures such as cylinders, spheres, pyramids and cones
- **G.GMD.1.A** See the skills and knowledge that are stated in the Standard.

18. THREE-DIMENSIONAL FIGURES II

- **VOLUME OF CYLINDERS AND CONES**

- **G.GMD.1.A** See the skills and knowledge that are stated in the Standard.
- **G.GMD.3.A** See the skills and knowledge that are stated in the Standard.
- **G.GMD.4.A** Ability to make connections between two-dimensional figures such as rectangles, squares, circles, and triangles and three-dimensional figures such as cylinders, spheres, pyramids and cones

- **MODELING SITUATIONS WITH GEOMETRY**

- **G.MG.2.A** See the skills and knowledge that are stated in the Standard.
- **G.GMD.4.A** Ability to make connections between two-dimensional figures such as rectangles, squares, circles, and triangles and three-dimensional figures such as cylinders, spheres, pyramids and cones
- **G.MG.3.A** See the skills and knowledge that are stated in the Standard.

19. SURFACE AREA

- **SURFACE AREA AND VOLUME OF SPHERES**

- **G.GMD.4.A** Ability to make connections between two-dimensional figures such as rectangles, squares, circles, and triangles and three-dimensional figures such as cylinders, spheres, pyramids and cones
- **G.GMD.3.A** See the skills and knowledge that are stated in the Standard.

- **SURFACE AREA OF COMPOSITE SOLIDS**

- **G.MG.1.A** Ability to connect experiences from Unit 2 and Unit 3 with two-dimensional and three-dimensional shapes to circles

- **SURFACE AREA OF SIMILAR SOLIDS**

- **G.SRT.2.A** Ability to make connections between the definition of similarity and the attributes of two given figures
- **G.SRT.2.B** Ability to set up and use appropriate ratios and proportions
- **G.MG.1.A** Ability to connect experiences from Unit 2 and Unit 3 with two-dimensional and three-dimensional shapes to circles

20. VOLUME OF SIMILAR AND COMPOSITE SHAPES

- **VOLUME OF COMPOSITE SOLIDS**

- **G.GMD.3.A** See the skills and knowledge that are stated in the Standard.

- **VOLUME OF SIMILAR SOLIDS**

- **G.SRT.2.B** Ability to set up and use appropriate ratios and proportions
- **G.MG.1.A** Ability to connect experiences from Unit 2 and Unit 3 with two-dimensional and three-dimensional shapes to circles