

# Unit 4 Geometry

Content Area: **Mathematics**  
Course(s): **Math - Grade 7**  
Time Period: **March**  
Length: **9 Weeks**  
Status: **Published**

## Unit Overview

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Solve real-life problems and mathematical problems involving angle measure, area, surface area, and volume.

Draw, construct, and describe geometric figures and describe the relationships between them.

Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

*Benchmark Assessment 3 will be given after chapter 6 in this unit.*

## Transfer

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Students will be able to independently use their learning to...

Real world and geometric structures are composed of shapes and spaces with specific properties.

- Shapes are defined by their properties.
- Shapes have a purpose for designing structures.
- Three-dimensional figures have relationships to specific two-dimensional figures.
- Planes that cut polyhedra create related two-dimensional figures.

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For more information, read the following article by Grant Wiggins.

[http://www.authenticeducation.org/ae\\_bigideas/article.lasso?artid=60](http://www.authenticeducation.org/ae_bigideas/article.lasso?artid=60)

## Meaning

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## Understandings

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Students will understand that...

- Everyday objects have a variety of attributes, each of which can be measured in many ways.
- What we measure affects how we measure it.
- Measurements can be used to describe, compare, and make sense of phenomena.
- Everyday objects have a variety of attributes, each of which can be measured in many ways.
- What we measure affects how we measure it.
- Measurements can be used to describe, compare, and make sense of phenomena.
- Reasoning and/or proof can be used to verify or refute conjectures or theorems in geometry.
- Coordinate geometry can be used to represent and verify geometric/algebraic relationships.
- Shape and area can be conserved during mathematical transformations.
- Geometric properties can be used to construct geometric figures.
- Geometric relationships provide a means to make sense of a variety of phenomena.
- Algebraic expressions can be used to represent and find missing measures of angles and sides of geometric figures.

## **Essential Questions**

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Students will keep considering...

- Unit 4 (Chapter 5 & 6): How can you use different types of measurements to solve real-life problems?
- How does geometry help us describe real-world objects?
- How do measurements help you describe real-world objects?

## **Application of Knowledge and Skill**

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### **Students will know...**

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Students will know...

Solve problems involving surface area of figures composed of triangles, quadrilaterals, and circles using the appropriate formulas.

- Solve problems involving volume of right rectangular prisms.
- Find area of quadrilaterals and triangles, and of other polygons through decomposition strategies.

Use algebraic expressions to find missing dimensional measurements, such as angles and side measures.

## **Students will be skilled at...**

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Students will be skilled at...

Use freehand, ruler, protractor and technology to draw geometric shapes with given conditions. (7.G.2)

- Construct triangles from 3 measures of angles or sides. (7.G.2)
- Given conditions, determine what and how many type(s) of triangles are possible to construct. (7.G.2)
- Describe the two-dimensional figures that result from slicing three-dimensional figures (right rectangular prisms and right rectangular pyramids). (7.G.3)
- Identify and describe supplementary, complementary, vertical, and adjacent angles. (7.G.5)
- Use understandings of supplementary, complementary, vertical and adjacent angles to write and solve equations. (7.G.5)
- Explain (verbally and in writing) the relationships between the angles formed by two intersecting lines. (7.G.5)
- Solve mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. (7.G.6)
- Solve real-world problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

## **Academic Vocabulary**

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Chapter 7

Acute angle, acute triangle, adjacent angles, base, complementary angles, cone, congruent, congruent segments, coplanar, cross section, cylinder, diagonal, edge, equilateral triangle, face, isosceles triangle, obtuse angle, obtuse triangle, plane, polyhedron, prism, pyramid, right angle, right triangle, scale, scale drawing, scale factor, scale model, scalene triangle, skew line, straight angle, supplementary angles, triangle, vertex, vertical angles

Chapter 8

Center, circle, circumference, composite figure, diameter, lateral face, lateral surface area, pi, radius, regular pyramid, semicircle, slant height, surface area, volume

## **Learning Goal #1**

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Draw, construct, and describe geometrical figures and describe the relationships between them.

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

CRP.K-12.CRP2.1	Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.
CAEP.9.2.8.B.6	Demonstrate understanding of the necessary preparation and legal requirements to enter the workforce.
TECH.8.1.8	Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

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**Target #4.3.1--(Level of Difficulty: Comprehension, DOK: 3 - strategic thinking)**

SWBAT examine quotients and use a graph to decide whether two associated quantities are in a proportional relationship.

SWBAT understand that it can be difficult to measure the quantities in a proportional relationship accurately.

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MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.7.RP.A.2a	Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
MA.K-12.4	Model with mathematics.

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**Target #4.3.2--(Level of Difficulty: Retrieval(recalling), DOK: 2 - skill/concept)**

SWBAT describe the characteristics that make a shape a circle.

SWBAT identify the diameter, center, radius, and circumference of a circle.

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MA.K-12.1	Make sense of problems and persevere in solving them.
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MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.K-12.7	Look for and make use of structure.
MA.7.G.A	Draw, construct, and describe geometrical figures and describe the relationships between them.
MA.7.G.A.2	Draw (with technology, with ruler and protractor, as well as freehand) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

**Target #4.3.3 (Level of Difficulty: Comprehension/Analysis(classifying), DOK: 3 - StrategicThinking)**

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SWBAT describe the relationship between circumference and diameter of any circle.

SWBAT explain what  $\pi$  means.

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MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.7.RP.A.2	Recognize and represent proportional relationships between quantities.
MA.7.RP.A.2a	Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
MA.K-12.4	Model with mathematics.
MA.7.G.B.4	Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

**Target #4.3.4 --(Level of Difficulty: Comprehension, DOK: 3 - strategic thinking)**

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SWBAT choose an approximation for  $\pi$  based on the situation or problem.

SWBAT if they know the radius, diameter, or circumference of a circle, find the other two.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.

MA.7.G.B.4 Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

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**Target #4.3.5 --(Level of Difficulty: Comprehension, DOK: 3 - strategic thinking)**

SWBAT If they know the radius or diameter of a wheel, find the distance the wheel travels in some number of revolutions.

MA.K-12.1 Make sense of problems and persevere in solving them.

MA.K-12.3 Construct viable arguments and critique the reasoning of others.

MA.7.RP.A.2a Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.

MA.K-12.4 Model with mathematics.

MA.7.RP.A.2c Represent proportional relationships by equations.

MA.7.RP.A.3 Use proportional relationships to solve multistep ratio and percent problems.

MA.7.G.B.4 Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

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**Target #4.3.6--(Level of Difficulty: Comprehension, DOK: 3 - strategic thinking)**

SWBAT calculate the area of a complicated shape by breaking it into shapes whose area I know how to calculate.

MA.K-12.1 Make sense of problems and persevere in solving them.

MA.K-12.2 Reason abstractly and quantitatively.

MA.K-12.3 Construct viable arguments and critique the reasoning of others.

MA.K-12.4 Model with mathematics.

MA.7.G.A.1 Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

MA.7.G.B Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

MA.7.G.B.6 Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

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**Target #4.3.7--(Level of Difficulty: Comprehension, DOK: 3 - strategic thinking)**

SWBAT know whether or not the relationship between the diameter and area of a circle is proportional and can explain how they know.

SWBAT if they know a circle's radius or diameter, find an approximation for its area.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.7.RP.A.2a	Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
MA.K-12.4	Model with mathematics.
MA.K-12.5	Use appropriate tools strategically.
MA.7.G.A	Draw, construct, and describe geometrical figures and describe the relationships between them.
MA.7.G.B	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.
MA.7.G.B.4	Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

**Target #4.3.8 --(Level of Difficulty: Comprehension, DOK: 3 - strategic thinking)**

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SWBAT explain how the area of a circle and its circumference are related to each other.

SWBAT know the formula for area of a circle.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.K-12.8	Look for and express regularity in repeated reasoning.
MA.7.G.B.4	Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

**Target #4.3.9--(Level of Difficulty: Comprehension, DOK: 3 - strategic thinking)**

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SWBAT calculate the area of more complicated shapes that include fractions of circles.

SWBAT write exact answers in terms of  $\pi$ .

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.

MA.7.G.B.4 Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

**Target #4.3.10 --(Level of Difficulty: Comprehension, DOK: 2 - skill/concept)**

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SWBAT decide whether a situation about a circle has to do with area or circumference.

SWBAT use formulas for circumference and area of a circle to solve problems.

MA.K-12.1 Make sense of problems and persevere in solving them.  
MA.K-12.2 Reason abstractly and quantitatively.  
MA.K-12.3 Construct viable arguments and critique the reasoning of others.  
MA.K-12.4 Model with mathematics.  
MA.7.G.B.4 Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

**Target #4.3.11--(Level of Difficulty: Comprehension, DOK: 3 - strategic thinking)**

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SWBAT apply my understanding of area and circumference of circles to solve more complicated problems.

MA.K-12.1 Make sense of problems and persevere in solving them.  
MA.K-12.3 Construct viable arguments and critique the reasoning of others.  
MA.K-12.4 Model with mathematics.  
MA.K-12.6 Attend to precision.  
MA.7.EE.B.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.  
MA.7.G.A.1 Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.  
MA.7.G.B.4 Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

**Target #4.7.1(Level of Difficulty: Retrieval(executing), DOK: 2 - Skill/Concept)**

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SWBAT find unknown angle measures by reasoning about adjacent angles with known measures.

SWBAT recognize when an angle measures 90,180,or 360.



MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.K-12.5	Use appropriate tools strategically.
MA.7.G.A	Draw, construct, and describe geometrical figures and describe the relationships between them.
MA.7.G.B	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

**Target #4.7.2 (Level of Difficulty: Retrieval(executing), DOK: 2 - Skill/Concept)**

SWBAT find unknown angle measures by reasoning about complementary or supplementary angles.

SWBAT recognize when adjacent angles are complementary or supplementary.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.K-12.6	Attend to precision.
MA.7.G.B	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.
MA.7.G.B.5	Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.

**Target #4.7.3 --(Level of Difficulty: Retrieval(executing), DOK: 2 - Skill/Concept)**

SWBAT determine if angles that are not adjacent are complementary or supplementary.

SWBAT explain what vertical angles are in their own words.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.7.EE.A	Use properties of operations to generate equivalent expressions.
MA.7.G.B.5	Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.

**Target #4.7.4--(Level of Difficulty: Comprehension, DOK: 3 - strategic thinking)**

SWBAT reason through multiple steps to find unknown angle measures.

SWBAT recognize when an equation represents a relationship between angle measures.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.4	Model with mathematics.
MA.7.G.A	Draw, construct, and describe geometrical figures and describe the relationships between them.

**Target #4.7.5--(Level of Difficulty: Comprehension, DOK: 3 - strategic thinking)**

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SWBAT write an equation to represent a relationship between angle measures and solve the equation to find unknown angle measures.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.K-12.5	Use appropriate tools strategically.
MA.7.EE.B.4	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.
MA.7.G.B.5	Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.

**Target #4.7.6 (Level of Difficulty: Comprehension, DOK: 2 - Skill/Concept)**

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SWBAT show that the 3 side lengths that form a triangle cannot be rearranged to form a different triangle.

SWBAT show that the 4 side lengths that form a quadrilateral can be rearranged to form different quadrilaterals.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.7.NS.A.1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
MA.7.G.A.2	Draw (with technology, with ruler and protractor, as well as freehand) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

### **Target #4.7.7--(Level of Difficulty: Comprehension, DOK: 2 - skill/concept)**

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SWBAT reason about a figure with an unknown angle.

SWBAT show whether or not 3 side lengths will make a triangle.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.7.G.A.2	Draw (with technology, with ruler and protractor, as well as freehand) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

### **Target #4.7.8--(Level of Difficulty: Comprehension, DOK: 2 - skill/concept)**

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SWBAT understand that changing which sides and angles are next to each other can make different triangles.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.7.G.A.2	Draw (with technology, with ruler and protractor, as well as freehand) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

### **Target #4.7.9--(Level of Difficulty: Comprehension, DOK: 3 - strategic thinking)**

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SWBAT when given two angle measures and one side length, be able to draw different triangles with these measurements or show that these measurements determine one unique triangle or no triangle.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.7.G.A	Draw, construct, and describe geometrical figures and describe the relationships between them.
MA.7.G.A.2	Draw (with technology, with ruler and protractor, as well as freehand) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

### **Target #4.7.10--(Level of Difficulty: Comprehension, DOK: 3 - strategic thinking)**

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SWBAT when given two side lengths and one angle measure, be able to draw different triangles with these measurements or show that these measurements determine one unique triangle or no triangle.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.7.G.A.2	Draw (with technology, with ruler and protractor, as well as freehand) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

**Target #4.7.11--(Level of Difficulty: Comprehension, DOK: 3 - strategic thinking)**

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SWBAT explain that when a three dimensional figure is sliced it creates a face that is two dimensional.

SWBAT picture different cross sections of prisms and pyramids.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.7.G.A.3	Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.

**Target #4.7.12--(Level of Difficulty: Comprehension, DOK: 3 - strategic thinking)**

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SWBAT explain why the volume of a prism can be found by multiplying the area of the base and the height of the prism.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.7.G.B.6	Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

**Target #4.7.13--(Level of Difficulty: Comprehension, DOK: 3 - strategic thinking)**

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SWBAT calculate the volume of a prism with a complicated base by decomposing the base into quadrilaterals or triangles.

MA.K-12.1	Make sense of problems and persevere in solving them.
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MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.7.G.A.3	Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.
MA.7.G.B.6	Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

**Target #4.7.14--(Level of Difficulty: Comprehension, DOK: 2 - skill/concept)**

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SWBAT find and use shortcuts when calculating the surface area of a prism.

SWBAT picture the net of a prism to help me calculate its surface area.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.7.G.B.6	Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

**Target #4.7.15--(Level of Difficulty: Comprehension, DOK: 3 - strategic thinking)**

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SWBAT decide whether they need to find the surface area or volume when solving a problem about a real-world situation.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.7.G.B	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.
MA.7.G.B.6	Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

**Target #4.7.16--(Level of Difficulty: Comprehension, DOK: 2 - skill/concept)**

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SWBAT solve problems involving the volume and surface area of children's play structures.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.7.RP.A	Analyze proportional relationships and use them to solve real-world and mathematical

	problems.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.7.G.B	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.
MA.7.G.B.6	Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

### **Target #4.7.17--(Level of Difficulty: Comprehension, DOK: 4 - extended thinking)**

SWBAT build a triangular prism from scratch.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.7.G.A.2	Draw (with technology, with ruler and protractor, as well as freehand) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.
MA.7.G.B.6	Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

### **Formative Assessment and Performance Opportunities**

- Exit Ticket
- Interactive Notes
- Kahoot
- Quizizz
- Quizlet Live
- Status Check (Thumbs up/down,...)
- Student Presentations
- Student-Teacher Conference
- white boards

### **Summative Assessment**

- bench marks
- linkit

- Project
- Quiz
- Test

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.7.G.B.6	Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

## **21st Century Life and Careers**

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CAEP.9.2.8.B.2	Develop a Personalized Student Learning Plan with the assistance of an adult mentor that includes information about career areas of interest, goals and an educational plan.
CAEP.9.2.8.B.3	Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career.
CAEP.9.2.8.B.4	Evaluate how traditional and nontraditional careers have evolved regionally, nationally, and globally.

## **Accommodations / Modifications**

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- calculators
- creating triangles in desmos
- lesson extensions
- leveled centers
- manipulatives
- modifications as per IEP/504
- provide notes
- review and practice
- RTI section of Glencoe
- small group instruction
- teacher conferences
- Use construction paper to create a soda can (volume/surface area)
- use real world products to find find surface area/volume (cereal boxes, tissue boxes)
- word bank
- working with manipulative of net shapes

## **Unit Resources**

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- Aleks

- CK12 online resources
- <http://achievethecore.org/page/1118/coherence-map>

## **Interdisciplinary Connections**

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- ELA: Using real life marketing and advertising strategies when introducing finding the volume and surface area of geometric shapes.
- Geography: Converting the distance from one county to another using scale factors from a map.

LA.RL.7.9

Compare, contrast and reflect on (e.g., practical knowledge, historical/cultural context, and background knowledge) a fictional portrayal of a time, place, or character and a historical account of the same period as a means of understanding how authors of fiction use or alter history.

SOC.6.1.8.B.1.b

Analyze the world in spatial terms (e.g., longitude, latitude) using historical maps to determine what led to the exploration of new water and land routes.