

Plan for Unit Grade 7 Unit 7: Angles, Triangles, and Prisms

Essential prior concepts to engage with this unit	drawing angles, measuring angles, identifying angles
Brief narrative of approach	Begin by investigating whether sets of angle and side length measurements determine unique triangles or multiple triangles, or fail to determine triangles. Study and apply angle relationships, learning to understand and use the terms “complementary,” “supplementary,” “vertical angles,” and “unique.” This leads to analyzing and describing cross-sections of prisms, pyramids, and polyhedra. Finally, students use the formula for the volume of a right rectangular prism, and solve problems involving area, surface area, and volume.

Lessons to Add	Lessons to Remove or Modify
	No lessons are recommended to remove or modify to make room for additional lessons. If time is needed, consider removing these optional activities: 1. Remove optional Lesson 1, Activity 4. 2. Remove optional Lesson 3, Activity 4. 3. Remove optional Lesson 6, Activity 4. 4. Remove optional Lesson 11, Activity 4. 5. Remove optional Lesson 12, Activity 4. 6. Remove optional Lesson 15, Activity 4. 7. Remove optional Lesson 17.
Lessons added: 0	Lessons removed: 0

Modified Plan for Grade 7 Unit 5

Day	IM lesson	Notes
	assessment	7.7 Check Your Readiness assessment Note that the Check Your Readiness assessment includes item-by-item guidance to inform just-in-time adjustments to instruction within the lessons in 7.6.
1	7.7.1	
2	7.7.2	
3	7.7.3	
4	7.7.4	
5	7.7.5	
6	7.7.6	
7	7.7.7	
8	7.7.8	
9	7.7.9	
10	7.7.10	
11	7.7.11	
12	7.7.12	
13	7.7.13	
14	7.7.14	

15	7.7.15	
16	7.7.16	
17	7.7.17	
18	7.7 End Assessment	

Priority and Category List for Lessons

High priority (+), Medium priority (0), Low priority (-)

E: Explore, Play, and Discuss, D: Deep Dive, A: Synthesize and Apply

Lesson	Priority (+, 0, -)	Category (E, D, A)	Notes
7.7.1	0	E	In this lesson, students gain hands-on experience composing, decomposing, and measuring angles. They refresh their memory about the relationship between right angles, straight angles (180°), and “all the way around” angles (360°), and they fit pattern blocks around a point to find out the angles at their vertices. They use simple equations they learned about in the previous unit to solve for angles.
7.7.2	+	E	In this lesson, students are introduced to the terms complementary, for describing two angles whose measures add to 90 degrees, and supplementary, for describing two angles whose measures add to 180 degrees. They practice finding an unknown angle given the measure of another angle that is complementary or supplementary.
7.7.3	0	D	In this lesson, students see that angles do not need to be adjacent to be complementary or supplementary. Students are also introduced to and begin to use the term vertical angles for describing the opposite angles formed when two lines cross.
7.7.4	+	D	In this lesson, students apply skills to find unknown angle measures in multi-step problems.

7.7.5	+	A	Students practice writing and solving equations of the form $px + q = r$ in the context of finding unknown angle measures. This brings together work with equations from the previous unit and work with angles from earlier lessons in this unit, giving students a chance to build fluency with both of these concepts.
7.7.6	0	E	The goal of the lesson is to help students see that sometimes lots of different shapes are possible under given constraints about side lengths, and that at other times, with different constraints, it might be that only one shape is possible or that no shape is possible.
7.7.7	+	E	In this lesson, students experiment with constructing triangles given 2 or 3 side lengths. They start by working with cardboard strips and metal fasteners, as in the previous lesson. They discover that there are some combinations of lengths that do not make a triangle.
7.7.8	+	D	In this lesson, students examine sets of triangles in which all the triangles share 3 common measures of angles or sides. Students learn to recognize when triangles are “identical copies” that are oriented differently on the page, and when they are different triangles.
7.7.9	+	D	In this lesson and the next, students build on that experience by drawing their own triangles with specified measures: a given angle, two given angles, and two given angles and a given side length.
7.7.10	+	A	Whereas in the previous lesson students focused on two angles and a side length, in this lesson students focus on two side lengths and an angle, and on three angles. Students continue to gain experience with compass, ruler, and protractor.
7.7.11	0	E	This lesson introduces the idea that slicing a three-dimensional figure with a plane results in a two-dimensional cross section.
7.7.12	0	E	In this lesson, students learn that they can calculate the volume of any right prism by multiplying the area of the base times the height of the prism.

7.7.13	+	D	In this lesson, students continue working with the volume of right prisms. Students encounter prisms where the base is composed of triangles and rectangles, and decompose the base to calculate the area.
7.7.14	+	D	In this lesson students find surface areas of prisms, and see that structure of a prism allows for shortcuts in adding up the areas of the faces.
7.7.15	0	A	This is the first of two lessons where students apply their knowledge of surface area and volume to solve real-world problems. The purpose of this first lesson is to help students distinguish between surface area and volume and to choose which of the two quantities is appropriate for solving a problem.
7.7.16	+	A	In this second lesson on applying surface area and volume to solve problems, students solve more complex real-word problems that require them to choose which of the two quantities is appropriate for solving the problem, or whether both are appropriate for different aspects of the problem
7.7.17	-	A	In this culminating lesson, students use what they have learned in this unit to build a triangular prism, given some measures for the angles and sides of the triangular base.