Module 5: Constructing and Measuring

TOPIC 1: ANGLES AND TRIANGLES

This topic begins by establishing the building blocks of geometry, using appropriate drawings, vocabulary, and notation. Students learn about formal constructions and use construction tools to duplicate segments and angles and to make additional constructions. Students then explore different pairs of angles. Finally, students use both patty paper and formal construction tools to determine if given information defines a unique triangle, multiple triangles, or no triangles.
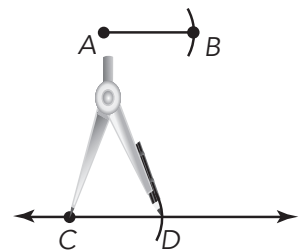
Where have we been?

In the very first topic in this course, students were introduced to a compass to construct congruent circles. Geometric terms students have used in the past—point, line, and plane—are formally defined, and students learn the notation for each.
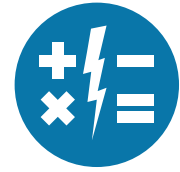
Where are we going?

This topic provides the building blocks for the remaining geometry topics in middle school, as well as those in high school. In grade 8, students will build from analyzing what happens when two lines intersect to analyzing what happens when more than two lines intersect. In grade 8 and in high school geometry, students will use transformations to establish conditions for similarity and congruence.

Using Constructions to Reason About Geometry

Students learn about the ancient method of constructions to create representations of geometric objects. With constructions, one is allowed only a compass and straightedge (not a ruler) to create geometric figures. The construction shown involves duplicating a line segment. This construction demonstrates that congruent line segments are line segments that have the same length.

Myth: Some students are "right-brain" learners while other students are "left-brain" learners.

As you probably know, the brain is divided into two hemispheres: the left and the right. Some categorize people by their preferred or dominant mode of thinking. "Right-brain" thinkers are considered to be more intuitive, creative, and imaginative. "Left-brain" thinkers are more logical, verbal, and mathematical.

But another way to think about the brain is from the back to the front, where information goes from highly concrete to abstract. So, why don't we claim that some people are "back of the brain" thinkers who are highly concrete; whereas, others are "frontal thinkers" who are more abstract?

The brain is a highly interconnected organ. Each lobe hands off information to be processed by other lobes, and they are constantly talking to each other. So it's time to dispense with the distinction between right- and left-brain thinkers. We are all whole-brain thinkers!

#mathmythbusted

Talking Points

You can further support your student's learning by asking questions about the work they do in class or at home. Your student is continuing to reason about abstract geometric objects and constructions.

Questions to Ask

- Does your answer make sense? Why?
- Can you show me the strategy you used to solve this problem? Do you know another way to solve it?
- Is there anything you don't understand? How can you use today's lesson to help?

Key Terms

supplementary angles
Two angles are supplementary angles if the sum of their angle measures equals 180°.

complementary angles
Two angles are complementary angles if the sum of their angle measures equals 90°.

vertical angles
Vertical angles are two nonadjacent angles that are formed by two intersecting lines.

Triangle Inequality Theorem
The Triangle Inequality Theorem states that the sum of the lengths of any two sides of a triangle is greater than the length of the third side.