

Evaluation Overview
Tenth Grade – Geometry
Lesson #23—Lesson Time: 44:09

Evidence Notes	Implementing Instruction	Average Score
<p>The Geometry lesson begins with the teacher instructing the students to begin with a warm up set of problems. The teacher states that this is a review of previous course work. The warm up problems consisted of identifying geometric attributes of shapes such as parallel and perpendicular lines. The second set of warm up problems consisted of students solving for an unknown angle in a triangle using the angle sum theorem. This is a prerequisite standard building on students' knowledge of 7.G.B.4, which is not explicitly stated but the teacher does make reference that it is prior knowledge. During the course of the lesson the teacher states two objectives which consisted of 1) identify congruent triangles and 2) identify congruent parts of congruent triangles. These skills are embedded in the Geometry standard G.CO.B.7. This standard is not mentioned in the lesson and the teacher does not explain that this is a foundational skill for part of the standard. The teacher does state, in the beginning, middle, and end, the objective that he has set for the class. There is evidence in the student work on white boards, and as the teacher observes individual work that the students master the two objectives but does not explicitly call out the connection of this sub-objective for the overarching standard. Although the teacher provided examples of using angles when building bridges and in construction; a connection to how congruent parts of triangles influenced construction was not made. Evidence of mastery was being further assessed by the teacher through the use of an exit ticket. At the end of the lesson, he referred to the objectives again and stated, "We met both of our objectives." He said, "All of you guys have a good idea of the definition of congruent shapes and congruent parts and how to create them."</p>	<p>Standards and Objectives</p>	<p>3</p>
<p>The teacher shows two pictures of constructions, a building and a bridge, to give the students a visual representation of real-world constructions where triangles are used. The teacher states that "triangles are used in many real-world constructions". The teacher rarely engages students in mathematical discourse about the work that is assigned. The lesson structure consists of the teacher modeling a problem, then the students doing a problem together, and then a whole group discussion. Students are asked to discuss their solutions after their individual think time but the students do not discuss with small groups and move to whole group discussions. The teacher reinforced and rewarded students' efforts with comments such as, "Nice job guys," "Excellent," and "Very good." There was limited evidence for how inquiry, curiosity, and exploration were valued.</p>	<p>Motivating Students</p>	<p>2</p>
<p>The teacher referred to the posted agenda and objectives during the lesson which established the purpose and organization of the lesson. The teacher demonstrated how to use marks to identify congruent parts of triangles using visuals and examples. He told students "Watch me in the first one. I am going to explain my thinking." He labeled the question students needed to ask themselves as, "How many markings does an angle or side have?" The lesson was sequenced and segmented logically. It began with a warm-up followed by defining congruency, identifying congruent parts and congruent triangles. Communication used was concise and clear. Although the teacher referred to the posted objective and agenda during the lesson, it was done for the purpose of checking off where the students were within the lesson as opposed to a review or summary of the concepts learned. Therefore, there was limited evidence for the use of internal summaries. While the presentation of the content included proficient practices described in the rubric (modeling, visuals), the selected examples did not reflect the rigor needed for this grade level.</p>	<p>Presenting Instructional Content</p>	<p>3</p>
<p>The lesson started promptly and had a structure and pacing that consisted of a warm-up, notes, and exit ticket. The teacher asks students to do example problems individually and then discuss the work with their table groups during the notes portion of the lesson. It was not evident that the students moved into the small group phase before moving into the whole group discussions. Differentiation for students was not evident in this lesson structure. The lesson structure was coherent with a beginning, middle and end. Pacing was appropriate and allowed the teacher to assist students who needed additional support. At the end of the lesson, students were asked to describe in their own words what made two triangles congruent and to draw congruent triangles. Worksheets, white boards and exit tickets were readily available for students, ensuring no instructional time lost during transitions.</p>	<p>Lesson Structure and Pacing</p>	<p>3</p>

<p>The materials that were used in the lesson consisted of white boards, Elmo technology, a pre-generated notes page, and an exit ticket. The teacher utilizes individual think time and whole group discussions throughout the lesson. The teacher states at the end of the session that the exit ticket relates to the learning objectives. It was not evident that these activities provided opportunities for students to interact with other students discussing the math connections and relationships between different solution paths. Students were given opportunities to interact with another by checking answers with a partner, but specificity for expectations for partners or table groups was not provided; therefore, it appeared most students continued to work independently; thereby, limiting student to student interaction. There was limited evidence for how activities and materials elicited a variety of thinking, provided for student choice and reflection, and induced student curiosity and suspense.</p>	<p>Activities and Materials</p>	<p>2</p>
<p>The teacher did ask frequent questions about the procedural steps to identify congruent triangles and identify corresponding parts of congruent triangles. The teacher states in whole group and to individual students to be precise in labeling and using mathematical notation. For example he asked, “Why subtract instead of add?”, “Why is this correct?” and “What shape is used most often in construction? Why?” Students were frequently asked to explain their thinking when providing verbal answers. There The teacher calls on several students as volunteers to show work and provide answers. Students did not ask other students questions in discussions. There was limited evidence for the use of wait time.</p>	<p>Questioning</p>	<p>3</p>
<p>The teacher circulated around the room during individual work time and gave feedback to students based on if they had the correct labeling of the triangles. The teacher sometimes asked assessing questions. In the segment prior to the exit ticket students worked problems on the white board to display their work. Per the teacher response to the work, most students labeled and identified the triangles correctly. The teacher did not ask for additional explanations or for comparisons to be made about the different solution paths. Feedback was given that expanded on answers students provided. This enabled students to know performance criteria for meeting the lesson objectives. For example, the teacher asked the students why the triangles were congruent. A student replied because they are the same size and shape. The teacher said, “Yes. But this one is upside down, does that matter?” The student said, “No.” The teacher added and said, “Good. It is still the same size and shape and that is what counts.” There was no evidence of students providing academic feedback to one another.</p>	<p>Academic Feedback</p>	<p>3</p>
<p>The students engaged in whole group discussions for the majority of the lesson. Students were also asked to work individually and discuss solutions with their table groups. It was evident that students were working individually but it was not evident that students discussed solutions with their table groups Little time was given for student to student discussions. It was not evident the responsibilities for the small group discussions. When working individually, students were encouraged to check answers with a partner; however, evidence was not clear if students did this or the effect it had upon student learning. Clear expectations for partner or table work could have provided opportunities for students to check the accuracy of their work with others and held students accountable for individual and group work.</p>	<p>Grouping</p>	<p>2</p>
<p>The teacher displayed accurate content knowledge of congruent triangles, corresponding parts of congruent triangles, and the precise mathematical notation. The teacher attends to precision by asking students to repeatedly label the sides, angles, and triangles accurately. The teacher states that the “marks” on the triangle are important in labeling and determining congruent pairs of triangles. The teacher does not explicitly state that the side marks are tick marks and the angles marks are arc marks. A student does clarify the marks and calls out the difference by naming the angle marks “arcs”. The teacher displayed content knowledge of congruent</p>	<p>Teacher Content Knowledge</p>	<p>3</p>

triangles and the corresponding parts of the congruent triangle but does not explicitly state the underlying mathematics related to the G.CO.B.7 standard.		
In the beginning of the lesson the teacher did provide a real-world example for triangles. It was not evident throughout the lesson how this connected to identifying and labeling congruent triangles. The teacher asked several students questions, called on volunteers, and answered questions when a student had their hand raised. Differentiated instruction was not evident in this lesson as students completed the objectives with a procedural method. Differentiated instructional methods were limited to the use of visuals and oral explanations. There was no evidence for how student interest or cultural heritage was incorporated into the lesson.	Teacher Knowledge of Students	2
Analytical Thinking - Students had to identify and list the congruent triangles and corresponding parts of congruent triangles but they did not have to explain their thinking or make connections to multiple representations.	Thinking*	2
Drawing Conclusions/Justifying Solutions – Students labeled and identified congruent triangles in a procedural method. It was not evident that students developed a conceptual understanding of congruent triangles for the standard G.CO.B.7.	Problem Solving*	2