

## Grade 5 Lesson-Design Sample: Geometry

| <b>Preparing for the Lesson: Geometry</b>   |   |
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| <p><b>Unit:</b> Geometry<br/> <b>Date:</b> April 22<br/> <b>Lesson:</b> Classifying Two-Dimensional Shapes—Quadrilaterals</p>   |   |
| <p><b>Essential learning standard:</b> State the big idea content and process standard for the unit addressed during this lesson.</p> <ul style="list-style-type: none"> <li>• Content— <ul style="list-style-type: none"> <li>▸ I can classify two-dimensional figures based on properties.</li> </ul> </li> <li>• Process— <ul style="list-style-type: none"> <li>▸ I can use reasoning skills to problem solve. I can communicate my ideas and explain my thinking.</li> </ul> </li> </ul>   |   |
| <p><b>Learning target:</b> State the specific learning outcome or outcomes for this lesson.<br/> <i>Students will be able to classify two-dimensional figures (with a specific focus on quadrilaterals) based on properties and understand that attributes belonging to a category also belong to the subcategories of that category. For example, all rectangles have four right angles, and squares are rectangles, so all squares have four right angles.</i></p>  |   |
| <p><b>Academic language vocabulary:</b> State the academic vocabulary expectations for the lesson. Describe how you will explicitly address any new vocabulary.<br/> <i>Parallel Lines<br/> Polygon<br/> Quadrilateral—Parallelogram, rectangle, square, kite<br/> After the warm-up activity, which includes all of these shapes, students will define the different types of polygons. However, as a class we will review parallel lines together at the start of class by gathering student definitions of parallel lines on the whiteboard. These definitions will be based on what students recall from grade 4.</i></p> |   |
| <b>Beginning-of-Class Routines</b>  |   |
| <p><b>Prior knowledge:</b> Describe the warm-up activity you will use. How does the warm-up activity connect to students' prior knowledge, connect to an analysis of homework progress, or connect to future learning?<br/> <i>From grade 4, students have knowledge of right triangles, and they know how to classify two-dimensional shapes on the presence or absence of parallel or perpendicular lines. Students will start with a prior-knowledge warm-up task that asks them to sort a variety of polygons by the number of parallel sides.</i></p>  |   |
| <b>Instruction—During-Class Routines</b>  |   |
| <p><b>Task 1:</b> Cognitive Demand (Circle one): High or Low<br/> What are the learning activities to engage students in learning the target? Be sure to list materials you will need.<br/> <i>Since the warm-up started with asking students to sort polygons based on parallel sides, the first task will ask students to take it one step further. They will identify another way they could potentially sort the same shapes. They will need to provide justification for their new sorting.</i></p>  |   |
| <p>What will the teacher be doing?</p> <ul style="list-style-type: none"> <li>• How will you present and then monitor student response to the task?</li> <li>• How will you expect students to demonstrate proficiency of the learning target during in-class checks for understanding?</li> <li>• How will you scaffold instruction for students who are stuck during the lesson or the lesson tasks (assessing prompts)?</li> <li>• How will you further learning for students who are ready to advance beyond the standard during class (advancing prompts)?</li> </ul>  | <p><i>During this time, I will circulate around the room to monitor the types of sorting that students are doing.<br/> If it looks like a group is struggling, it might be helpful to ask them what else they notice about the shapes besides just the parallel sides. What do they notice about the angles or side lengths, and so on?<br/> Hopefully, students will start to see some of the attributes of quadrilaterals come to life.</i></p> |

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| <p>What will the students be doing?</p> <ul style="list-style-type: none"> <li>• How will students be actively engaged in each part of the lesson?</li> <li>• What type of student discourse does this task require—whole group or small group?</li> <li>• What mathematical thinking (reasoning, problem solving, justification) are students developing during this task?</li> </ul>  | <p><i>Students will have to work as a group to come up with another way to sort the eight shapes they started with.</i></p> <p><i>Once students have another way, they call me over to review their sort. Once approved, students will take a picture of their sort for their notes and record their justification.</i></p>   |
| <p><b>Task 2:</b> Cognitive Demand (Circle one): High or Low</p> <p>What are the learning activities to engage students in learning the target? Be sure to list materials you will need.</p> <p><i>To further enhance and extend their understanding of quadrilaterals, students will engage in another variation of a sort, but this time with twenty shapes, which include all quadrilaterals. Students will be given a new assortment of shapes—quadrilaterals, non-quadrilaterals, regular polygons, and not regular polygons. They will have to organize the shapes into the four different categories on a grid. This activity will specifically get them to look at shapes that fall into the quadrilateral, polygon section of the grid. From this, students will have an opportunity to make observations about the shapes—parallel lines, 90-degree angles, equal sides, and so on. Once students have sorted, they will record the different qualities or attributes about each quadrilateral on a poster paper.</i></p> |   |
| <p>What will the teacher be doing?</p> <ul style="list-style-type: none"> <li>• How will you present and then monitor student response to the task?</li> <li>• How will you expect students to demonstrate proficiency of the learning target during in-class checks for understanding?</li> <li>• How will you scaffold instruction for students who are stuck during the lesson or the lesson tasks (assessing prompts)?</li> <li>• How will you further learning for students who are ready to advance beyond the standard during class (advancing prompts)?</li> </ul>  | <p><i>I will provide directions and materials—the collection of shapes for students to sort.</i></p> <p><i>Assessing prompts:</i></p> <ul style="list-style-type: none"> <li>• <i>What do you notice about the shapes? What can you tell me about the number of sides? Could that help you sort?</i></li> <li>• <i>Where are you stuck?</i></li> </ul> <p><i>Advancing prompts: Try to add one more shape to each category—are there shapes that weren't represented?</i></p> <p><i>The goal of this section will be to get students to identify the qualities or attributes of quadrilaterals. Students will record the attributes they notice on a piece of poster paper.</i></p> |
| <p>What will the students be doing?</p> <ul style="list-style-type: none"> <li>• How will students be actively engaged in each part of the lesson?</li> <li>• What type of student discourse does this task require—whole group or small group?</li> <li>• What mathematical thinking (reasoning, problem solving, and justification) are students developing during this task?</li> </ul>  | <p><i>Students will work with their shoulder partner in their group to sort the shapes.</i></p> <p><i>Students will need to be able to communicate their ideas and provide a rationale for why they put the different shapes into the different categories.</i></p> <p><i>Students will also need to record their final grid on a piece of poster paper by drawing the shapes they sorted.</i></p>  |

**Task 3:** Cognitive Demand (Circle one): High or Low

What are the learning activities to engage students in learning the target? Be sure to list materials you will need. *Display the poster paper around the room and have groups do a gallery walk. As they walk around the room, they will provide feedback on the posters using sticky notes. They can provide feedback about what they like or a suggestion for the group to consider. (Use sentence starters, such as "Have you considered . . ." or "I wonder about . . .")*

*Students can take notes as they go around the room, especially if they see something they want to add or change for their poster. Students will then gather their posters to review the feedback and make final changes.*

*Then, as a class, we will have a discussion to build a complete list of quadrilateral attributes and different kinds of quadrilaterals. This will be done on a class poster and students will take notes.*

What will the teacher be doing?

- How will you present and then monitor student response to the task?
- How will you expect students to demonstrate proficiency of the learning target during in-class checks for understanding?
- How will you scaffold instruction for students who are stuck during the lesson or the lesson tasks (assessing questions)?
- How will you further learning for students who are ready to advance beyond the standard during class (advancing questions)?

*I will facilitate the whole-group discourse to summarize the learning for the day. In order to prepare for this, I will need to listen to and read student comments on the posters. By listening, I will have an idea of the groups I want to call on during the whole-group summary so I ensure I list all the attributes on the class poster, while also making sure students honor the thinking and the work of all groups.*  
*Start with groups that were able to get the easier attributes listed and end with the groups that were able to list the harder ones.*  
*I will ask questions and facilitate the summary of student thinking, so I need to take caution in telling students what they should have found. It should help to sequence the student groups that will report to the larger group.*

What will the students be doing?

- How will students be actively engaged in each part of the lesson?
- What type of student discourse does this task require—whole group or small group?
- What mathematical thinking (reasoning, problem solving, and justification) are students developing during this task?

*Students will work in groups, walking around the room for a gallery walk to review other groups' posters and take notes.*

**End-of-Class Routines**

**Common homework:** Describe the independent practice teachers will assign when the lesson is complete. *Students will use a worksheet to define the attributes of shapes within a category and be asked to name the shapes.*

**Teacher end-of-lesson reflection:** Which aspects of the lesson (tasks or teacher or student actions) led to student understanding of the learning target? What were common misconceptions or challenges with understanding, if any? How should you address these in the next lessons?  
*Based on the class discussion and student responses to the lesson closure, there are still a few students who need support identifying and defining attributes. I will adapt my lesson for the next day to include flexible grouping so I can offer support to those who may still need it.*