**Ordering Rectangles**

*Adapted from North Carolina Department of Public Instruction:* [*www.ncdpi.wikispaces.net*](http://www.ncdpi.wikispaces.net)

**Student Objective:** “I can define what area means and order rectangles by size using direct comparison.”

|  |  |
| --- | --- |
| **Common Core Standard to Measure** | **Mathematical Practices Addressed** |
| **3. MD.5** Recognize area as an attribute of plane figures and understand concepts of area measurement. | 1. Make sense of problems and persevere in solving them.  3. Construct viable arguments and critique the reasoning of others.  6. Attend to precision. |

**Materials:** “Ordering Rectangles” sheet (1 set of shapes on cardstock per group of 4-5), one set of enlarged demonstration rectangles (optional)

|  |  |  |
| --- | --- | --- |
| G  **Engage Students with the Goal** | State and Rate  Objective: “I can define what area means and order rectangles by size using direct comparison.”  Students rate themselves to the goal (1, 2, 3, 4). | Setting Objectives and Providing Feedback |
| A  **Access Prior**  **Knowledge** | Facilitate a discussion about the idea of “big.”  Questions to ask:  -What makes something big?”  -“What does big mean?” | Cues, Questions, and Advance Organizers |
| N  **New Information** | Hold up a few rectangles and ask students:  -“Which one do you think is the biggest?” “How do you know?”  -“What does biggest mean to you?”  Students may have differing viewpoints about which rectangle is biggest and what big means. Challenge their thinking, but do not give them answers. Students must defend their thinking through explanation and justify what they chose as the biggest. Give students time to discuss with a partner or group and then share thoughts with the class. Record their findings as a class or in interactive notebooks.  Tell students that they are going to be comparing the size of candy bars. Present the rectangles they will be working with as candy bars.  Ask these questions and have them discuss with a partner:  -What if these rectangles were your favorite candy bar?  -Which candy bar would you want? Why? | Identifying Similarities and Differences  Nonlinguistic Representation  Cues, Questions, and Advance Organizers |
| A  **Application** | Put students into groups of 3-4 and give each group a copy of the “Ordering Rectangles” sheet, but do not cut them out. Challenge the students to order them from “biggest” to “smallest,” according to their own definitions. Have students explore the different rectangles. Ask students to share their findings with the class.  As students share, either record or have a student record findings. Have students explain their reasoning for their order. Display the recorded findings from each group and discuss the differences and similarities in their ordering. | Cooperative Learning  Providing Feedback  Generating and Testing Hypotheses  Practice and Homework |
| N  **New Information** | Write the word area on the board and give them the definition for area…”the amount of space a shape covers or “takes up”.  Ask students and have students discuss:  -What were you doing to order the rectangles? Were you using area when you were ordering the rectangles?  -Could you use area to compare the rectangles? How so?  -How could we prove one rectangle is greater than the other?  -What if I said you could cut them out… would they be easier to compare? How would you do it? (Do not let students actually cut the rectangles up into fractional parts.) | Summarizing and Note-Taking  Cues, Questions, and Advance Organizers  Generating and Testing Hypotheses  Cooperative Learning  Providing Feedback |
| A  **Application** | Have students work in groups to cut out the rectangles and compare them again by overlapping them and holding them next to each other.  Have students write down their order from biggest to smallest area and discuss their reasoning with the class.  Ask them:  -Did you change your mind from the original order when you compared their size? If so, why?  -Is it still hard to compare them when I hold them side by side or overlap them? What makes it difficult?  -Which rectangle covers the most area? Which covers the smallest area? Why?  *The order is A, D, G, F, E, B, and C, which may help in facilitating the discussion.*  Have students write “area” and a description or explanation of it in their interactive notebooks/journals using words and pictures. Have students share their entry with other students. | Cooperative Learning  Providing Feedback  Generating and Testing Hypotheses  Cues, Questions, and Advance Organizers  Practice and Homework  Summarizing and Note-Taking |
| G  **Revisit the Goal** | State and Rate  Objective: “I can define what area means and order rectangles by size using direct comparison.”  Students rate themselves to the goal (1, 2, 3, 4). | Setting Objectives and Providing Feedback |

**Ordering Rectangles**

Cut out each of the rectangles.

Order the rectangles from largest to smallest.

**B**

**A**

**C**

**D**

**E**

**F**

**G**