Cluster 5: Reasoning with Shapes and their Attributes
Duration: 1-2 weeks
Content Standards: **This list includes standards that will be addressed in this cluster, but not necessarily mastered, since all standards are benchmarks for the end of the year. Please note the recommendations in the Important Considerations section of this cluster for more information.** **NC.3.G.1** Reason with two-dimensional shapes and their attributes. ● Investigate, describe, and reason about composing triangles and quadrilaterals and decomposing quadrilaterals. ● Recognize and draw examples and non-examples of types of quadrilaterals including rhombuses, rectangles, squares, parallelograms, and trapezoids.
Mathematical Practices: 1. Make sense of problems and persevere in solving them 2. Reason abstractly and quantitatively 3. Construct viable arguments and critique the reasoning of others 4. Model with mathematics **5. Use appropriate tools strategically** **6. Attend to precision** 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.
What is the mathematics? Students spend time in this cluster reasoning about two-dimensional shapes and their attributes.   It is essential that students internalize the attributes of quadrilaterals (particularly rectangles & squares) prior to exploring area and perimeter. Students will: ● Investigate characteristics of and compose triangles and quadrilaterals. ● Decompose quadrilaterals. ● Recognize and draw both examples and non-examples of a variety of quadrilaterals including rhombuses, rectangles, squares, parallelograms, and trapezoids. ● Communicate their reasoning by explaining their thinking and sharing their solutions.
Important Considerations ● This cluster was placed after multiplication & division to provide students a break after exploring multiple numeracy concepts and before moving into Area & Perimeter in Cluster 6. ● Without the solid understanding of the relationship between the sides of a quadrilateral, students will struggle to make sense of how area and perimeter are determined. ● When decomposing quadrilaterals, there are some opportunities to include discussions about fractions. For example, if a parallelogram (which includes rectangle, rhombus, and square) is divided into two congruent triangles along the diagonal, those two triangles are both ½ of the parallelogram. Another example is when both diagonals are drawn in a square or rhombus, four congruent triangles result. The four triangles are each ¼ of the square or rhombus.