High School Geometry FCPS 2025-2026 Math Unit Framework Topic 6

Geometry Topic 6: Quadrilaterals and Other Polygons	Estimate Time Frame: 8 Block Days
Essential Standards: G.6, G.24 Assessment Resource: End of Unit Common Assessment Folder and Formative Assessment Lesson: **FAL** Describing and Defining Quadrilaterals	

FCPS Supporting Links	Additional Supporting Links
Pacing Guide enVision Geometry Standards Crosswalk Resource FCPS P-12 Mathematics Guidance Document FCPS Achievement & Trauma-Informed Strategies in the Classroom	Kentucky Academic Standards KSA Blueprint Target of the Standards - conceptual, procedural & application Three-Reads Routine Notice and Wonder Routine **MILC Resources Topic 6-Quadrilaterals and Other Polygons** ***enVision Geometry Teacher Guide: page 246A to 246D for specific Topic 6 Focus-Coherence-Rigor***

Big Idea
Understanding the properties of quadrilaterals can be used to solve geometric problems and real-world scenarios.

Essential Questions	Common Preconceptions/Misconceptions
•What can I discover about a convex polygon's relationship between sides and angle sums? •How are the properties of parallelograms used to solve problems? •How are diagonals and angle measures related in kites and trapezoids? •How are diagonals and angle measures related in	• Students use previously learned definitions, theorems, postulates, and properties of lines, angles, and triangles to draw conclusions and to make inferences. • Conditions of Special Parallelograms found on p.290.

rectangles, rhombuses, and squares? **Theorems/Postulates:** •Polygon Interior Angle-Sum Theorem •Polygon Exterior Angle-Sum Theorem •All properties of parallelograms, rectangles, rhombuses, squares, trapezoids (including isosceles), and kites found on the Quadrilateral Family Tree	
Standards for Mathematical Practices	**Kentucky Interdisciplinary Literacy Practices (KILP)**
MP.1. Make sense of problems and persevere in solving them. **MP.2. Reason abstractly and quantitatively.** **MP.3. Construct viable arguments and critique the reasoning of others.** MP.4. Model with mathematics. MP.5. Use appropriate tools strategically. MP.6. Attend to precision. MP.7. Look for and make use of structure. MP.8. Look for and express regularity in repeated reasoning. ***enVision Teacher Guide: page 246D for specific Math Practice suggestions***	1. Recognize that text is anything that communicates a message. 2. Employ, develop, and refine schema to understand and create text. 3. View literacy experiences as transactional, interdisciplinary, and transformational. 4. Utilize receptive and expressive language arts to better understand self, others, and the world. **5. Apply strategic practices, with scaffolding and then independently, to approach new literacy tasks.** **6. Collaborate with others to create new meaning.** **7. Utilize digital resources to learn and share with others.** **8. Engage in specialized, discipline-specific literacy practices.** **9. Apply high-level cognitive processes to think deeply and critically about text.** 10. Develop a literacy identity that promotes lifelong learning. *Incorporating texts into math instruction fosters interdisciplinary learning for a more engaging educational experience.*

Essential Standards	Sample Learning Intentions & Success Criteria	HQIR/Resource Considerations
Cluster: Use coordinates to prove simple geometric theorems algebraically.		
KY.HS.G.24 Use coordinates within the coordinate plane to calculate measurements of two-dimensional figures. a. Compute the perimeters of various polygons. b. Compute the areas of triangles, rectangles, and other quadrilaterals.★ **MP.2, MP.4** *Supporting Standard: KY.HS.G.7, KY.HS.G.21, KY.HS.G.22, KY.HS.G.23*	We are learning to apply the properties of polygons. • I can use theorems related to polygon sums to find the measure of interior and exterior angles (and sums). We are learning to connect Algebra and Geometry through coordinates. • I can identify the coordinates of the figure's vertices on a plane. • I can calculate distances between points for the perimeter. • I can apply formulas for polygon perimeters accurately. • I can apply the triangle area formula correctly. • I can apply the quadrilateral area formula accurately. • I can communicate reasoning clearly.	• Topic 6-4 Desmos: Proving Quadrilaterals Using Their Properties (MILC) • Students utilize the distance formula to find the distances between points and to determine the area and/or perimeter of various geometric figures. • Topic 9-1
Cluster: Prove geometric theorems.		
KY.HS.G.6 Apply theorems for lines, angles, triangles, and ***parallelograms***. **MP.2, MP.3, KILP.1, KILP.3, KILP.8** *Supporting Standard: KY.HS.G.7, KY.HS.G.21, KY.HS.G.22, KY.HS.G.23*	We are learning to apply the properties of kites and trapezoids. • I can use properties of the diagonals of a kite to prove relationships and solve problems. • I can use the properties of an isosceles trapezoid to solve problems. • I can use the relationship between the	• Topic 6-1 Desmos Quadrilaterals (polygraphs) (MILC) Desmos Sum Interior Angle (MILC) • Topic 6-2 • Topic 6-3

□ Conceptual □ Procedural ❑ Application	lengths of the bases and midsegment of a trapezoid to solve problems. We are learning to prove and apply the parallelogram theorems. ● I can show that consecutive angles of a parallelogram are supplementary, and opposite angles are congruent. ● I can show that the diagonals of a parallelogram bisect each other. ● I can use the properties of a parallelogram to find missing values and solve problems. We are learning to prove and apply the properties of special parallelograms: rhombuses, rectangles, and squares. ● I can prove that the diagonals of rhombuses are perpendicular bisectors of each other and angle bisectors of the angles of a rhombus. ● I can prove that the diagonals of a rectangle are congruent. ● I can solve problems involving the properties of rectangles, rhombuses, and squares. ● I can identify rhombuses, rectangles, and squares by the characteristics of the diagonals of parallelograms.	Desmos Investigating Quadrilateral Diagonals (MILC) ● Topic 6-5 Lesson Quiz 6- 5a (Rectangles) Lesson Quiz 6-5b (Rhombuses) ● Topic 6-6 Desmos is embedded in enVision in the following: 6 - 1 Explore & Reason 6 - 1 Example 1 6 - 1 Theorem 6 - 1 6 - 1 Corollary **6 - 1 Theorem 6 - 2 (modeling)**

Attending to the Standards for Mathematical Practice

- Students use previously learned definitions, theorems, postulates, and properties of lines, angles, triangles, and parallelograms to draw conclusions and make inferences.

Supporting Standards

KY.HS.G.11 Understand theorems about triangles. a. Apply theorems about triangles. b. (+) Prove theorems about triangles. c. **Use similarity criteria for triangles** to solve problems and to prove relationships in geometric figures. **MP.1, MP.3**

KY.HS.G.7 Prove theorems about geometric figures. a. Construct formal proofs to justify lines, angles, and triangle theorems. b. (+) Construct formal proofs to justify theorems for parallelograms. (Advanced Geometry) **MP.6, MP.7**

KY.HS.G.21 Use coordinates to justify and prove simple geometric theorems algebraically. **MP.2, MP.6**

KY.HS.G.22 Justify and apply the slope criteria for parallel and perpendicular lines and use them to solve geometric problems. **MP.3, MP.7**

KY.HS.G.23 Find measurements among points within the coordinate plane. a. Use points from the coordinate plane to find the coordinates of the midpoint of a line segment and the distance between the endpoints of a line segment. b. Find the point on a directed line segment between two given points that partitions the segment in a given ratio. **MP.2, MP.8**

Vocabulary

interior angle, exterior angle, triangle, quadrilateral, pentagon, hexagon, heptagon, octagon, nonagon, decagon, dodecagon, n-gon, diagonal, parallelogram, isosceles trapezoid, kite, trapezoid, midsegment of a trapezoid, parallelogram, rectangle, rhombus, square, diagonal, consecutive angles

Theorems for parallelograms include: opposite sides are congruent, opposite angles are congruent, and the diagonals of a parallelogram bisect each other; conversely, rectangles are parallelograms with congruent diagonals.

*****Disclaimer: Success Criteria is the evidence students must produce to demonstrate learning. This example is not comprehensive.
** Mathematical Practices (A.MP. 1- 8) should be evidenced at some point throughout each unit, depending on the explored tasks. It is important to note that MP. 2 should support learning in every lesson.
******* Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appear throughout the high school standards indicated by a star symbol (★). The star symbol sometimes appears on the heading for a group of standards; in that case, it should be understood to apply to *all* standards in that group.