High School Geometry FCPS 2025-2026 Math Unit Framework Topics 4 and 5

Geometry Topic 4: Triangle Congruence **Geometry Topic 5: Relationships in Triangles**	**Estimate Time Frame: 8 Block Days**
Essential Standards: G.6, G.5 Assessment Resource: enVision Topic 4-5 and Formative Assessment Lesson: **FAL** Evaluating Conditions for Congruency	

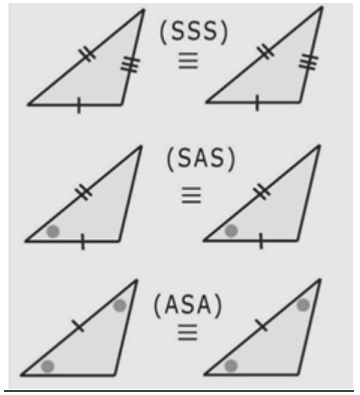
FCPS Supporting Links	**Additional Supporting Links**
Pacing Guide enVision Geometry Standards Crosswalk Resource FCPS P-12 Mathematics Guidance Document FCPS Achievement & Trauma-Informed Strategies in the Classroom	Kentucky Academic Standards KSA Blueprint Target of the Standards - conceptual, procedural & application Three-Reads Routine Notice and Wonder Routine **MILC Resources Topic 4 - Triangle Congruence** ***enVision Geometry Teacher Guide: page 148A to 148D for specific Topic 4 Focus-Coherence-Rigor*** **MILC Resources Topic 5 - Relationships in Triangles** ***enVision Geometry Teacher Guide: page 200A to 200D for Topic 5 Focus-Coherence-Rigor***

Big Ideas
Geometric figures are named based on their properties. Congruent figures have identical properties but lie in different positions or orientations. Once an essential number of facts are known, figures can be found to be congruent, which means that all corresponding sides and angles are congruent. Proving and applying congruence in triangles provides a basis for modeling more complex problems geometrically.

Essential Questions	**Common Preconceptions/Misconceptions**

•In what ways can congruence be used in daily life? •How can relationships between angles be used to solve problems? •How can I use rigid motion to prove figures congruent? •How can I use the properties of isosceles and equilateral triangles to solve for missing values? •How can I determine whether or not three side lengths can form a triangle? •How can I prove a line is a perpendicular bisector? •How can I prove that a ray is an angle bisector? **Theorems/Postulates:** •Reflexive Property •Isosceles Triangle Theorem •Converse of Isosceles Triangle Theorem •Side–Side–Side (SSS) •Side–Angle–Side (SAS) •Angle–Side–Angle (ASA) •Angle–Angle–Side (AAS) •Corresponding Parts of Congruent Triangles are Congruent (CPCTC) •Hypotenuse–Leg Theorem (HL) •Perpendicular Bisector Theorem •Pythagorean Theorem	• Students may have difficulty expressing their thinking in more formal ways. The teacher needs to encourage precision in oral and written communication. Classroom dialogue can also help students see the limitations of their thinking. • Make sure to review the Pythagorean Theorem with Perpendicular Bisector problems. • Some students may find it easier to identify the longest side in a triangle by ordering the angles from smallest to largest and using that list to order the sides. **Grade Level Skills:** ● Show triangles are congruent by mapping one triangle onto another. ● Determine if two triangles are congruent by showing corresponding pairs of sides and if corresponding pairs of angles are congruent. ● Use SSS, SAS, and ASA to determine if two triangles are congruent. ● Use SSS, SAS, and ASA to solve problems with congruent triangles. ● Use the definition of congruence in rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent. ● Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.
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 148D and 200D 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: Understand congruence in terms of rigid motions.		
KY.HS.G.5 Know and apply the concepts of triangle congruence: a. Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent. ☐ Conceptual ❑ Procedural ❑ Application	We are learning to use and explain triangle congruence (ASA, SAS, and SSS). ● I can relate congruence to rigid motions. ● I can demonstrate that two figures are congruent by using one or more rigid motions to map one onto the other. ● I can prove triangle congruence by AAS, SAS, ASA, and SSS criteria. Include HL. We are learning to intentionally select and/or calculate measures when determining criteria for triangle congruence. ● I can use triangle congruence to solve	● Topic 4-3 ● Topic 4-4 ● Desmos Investigating Triangle Congruence (MILC) ● 4 in a Row Activity (MILC) using bit.ly spinner or a paperclip ● Desmos embedded in 4-3 Explore & Reason ● Students will use SSS, SAS, and ASA to show

b. Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions. **MP.3, MP.6, KILP.2, KILP.5, KILP.6** ☐ Conceptual ❑ Procedural ❑ Application	problems	congruence and find measures of triangle parts.  • STEM Task: "Design a Bridge" is recommended in Topic 4. • **3 Act Math Task** - 3 Act: Best Triangle
Cluster: Prove geometric theorems.		
KY.HS.G.6 Apply theorems for lines, angles, triangles, and parallelograms. **MP.2, MP.3, KILP.6, KILP.9** *Supporting Standards: KY.HS.G.7, KY.HS.G.11, KY.HS.G.22, KY.HS.G.29* ☐ Conceptual ☐ Procedural ❑ Application * Parallelograms in Topic 6	We are learning to use parts of a triangle to solve problems. • I can write congruence statements identifying corresponding parts of congruent figures. • I can use the properties of isosceles triangles to find missing sides and angles. • I can use the properties of equilateral triangles to find missing sides and angles. • I can use the properties of isosceles triangles to find missing sides and angles • I can prove that two triangles are congruent (including HL) • I can determine if three segments can form a	• Topic 4-1 • 4-1 Desmos Congruence Card Sort (MILC) • Topic 4-2 Embedded Desmos within: 4-2 Explore & Reason 4-2 Example 1 Try It 4-2 Theorem 4-1 4-2 Theorem 4-2 4-2 Example 5 Try It

	triangle. ● I can order the sides/angles from shortest to longest, given the angles/sides of a triangle. ● I can use the Angle Bisector Theorem to find missing values in triangles. ● I can use the Perpendicular Bisector Theorem to find missing values in triangles. ● I can define the median and altitude of a triangle. ● I can sketch and identify the median and altitude of a triangle.	● Topic 5-1 ● 5-1 Make sure to review the Pythagorean Theorem with Perpendicular Bisector problems ● 5-1 Desmos Construct Perpendicular Bisector ● 5-1 Desmos Construct Angle Bisector (MILC) ● Topic 5-2 ● Topic 5-3 For 03 Geometry, No points of concurrency; just identify/sketch median and altitude For Advanced Geometry Points of Concurrency Card Sort (MILC) ● Topic 5-4 ● Topic 5-5
Cluster: Experiment with transformations in the plane		
KY.HS.G.4 Understand the effects of transformations of geometric figures. a. Given a geometric figure and a rotation, reflection, or translation, **draw** the transformed figure. b. **Specify** a sequence of transformations that will carry a given figure onto another.	I am learning to apply geometric descriptions of rigid motions to predict and draw transformed figures. ● I can **use** geometric descriptions of rigid motions to predict the effect of a given rigid motion on a given figure. ● I can use the definition of congruence in	● Topic 4-1 ● Topic 4-3 ● Topic 4-4

c. **Use** geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure. Given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent. **MP.2, MP.8** *Supporting Standards:* KY.HS.G.3 (+), KY.HS.G.2, KY.HS.G.29, KY.HS.G.21 ☐ Conceptual ❑ Procedural ❑ Application	terms of rigid motions to determine if two figures are congruent	

Attending to the Standards for Mathematical Practice

Students fluently and intentionally select and/or calculate measures (MP.6) when deliberating criteria for triangle congruence (MP.3). Students see the overall method of solving triangle congruency problems, but attend to details (MP.8) and use that structure to solve problems (MP.8).

Supporting Standards

KY.HS.G.1 Know and apply precise definitions of the language of Geometry:
a. Understand properties of line segments, angles, and circles.
b. Understand the properties of and differences between perpendicular and parallel lines. **MP.3, MP.6**

KY.HS.G.3 (+) Develop formal definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments. **MP.6, MP.7**

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

KY.HS.G.29 Use geometric shapes, their measures, and their properties to describe objects in real-world settings. **MP.1, MP.4**

KY.HS.G.31 Apply geometric methods to solve design problems. ★ **MP.1, MP.4**
Vocabulary
acute, obtuse, right, equiangular, equilateral, isosceles, scalene, congruence statement, legs of isosceles triangle, base angles, vertex angle, included angle, included side, non-included side, hypotenuse, legs of right triangle, median, altitude, perpendicular bisector, angle bisector

*****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.