Geometry Concepts and Connections Unit 3: Exploring Congruence

Overview:

In this unit, students will be introduced to transformations in the coordinate plane, describe a sequence of transformations that will map one figure onto another, and describe transformations that will map a figure onto itself. Students will use rigid motion transformations to develop an understanding of congruence and use this to prove theorems involving triangles.

Learning Targets

In Unit 3, students will:

- Develop definitions of rotation, reflections, and translations in terms of their properties
- Identify figures as preimages and images identify the lines of symmetry and angles of rotations to map a figure onto itself
- Identify angles of rotation, lines of reflection, and directions to translations to map a preimage onto its image
- Verify that the image resulting from a rotation, reflection, or translation is congruent to the original image
- Write a congruent statement for two congruent figures
- Identify resulting coordinates from translations, reflections, and rotations
- Recognize the relationship between the coordinates and the transformation use point notation to represent transformations in the coordinate plane
- Identify congruent corresponding size and congruent corresponding angles reflect, translate, and rotate a given figure, such as a triangle or quadrilateral, by using graph paper or geometry software
- Given a rectangle, parallelogram, trapezoid, or regular Polygon, describe a transformation sequence that carries it onto itself
- Examine parallelograms to determine the theories and properties used to prove congruent parts apply properties of congruence to solve problems with missing values involving corresponding parts
- Use ASA, SAS, SSS, AAS, and HL congruence postulates/theorems to prove triangles are congruent
- Write the converse inverse and contrapositive of a conditional statement

Key Vocabulary: (linked to GA DOE Interactive Glossary)

Congruence	Isometry	Reflection	Rigid Motion
Rotation	Similarity	Symmetry	Translation
Angle-Angle-Side (AAS)	Angle-Side-Angle (ASA)	Hypotenuse-Leg (HL)	Side-Angle-Side (SAS)
Side-Side-Side (SSS)			

Supporting Resources:

http://ctlslearn.cobbk12.org/

Congruent (mathsisfun.com)

Congruent shapes & transformations (video) | Khan Academy

https://gavirtual.instructure.com/courses/34328

What Does Congruent Mean? | Virtual Nerd