Backward Design Unit Plan--Richards Career Academy (RCA)

Quarter:	3	Unit number: 2	Unit title:	Rigid Transformations and Congruence		
Academic Course:	Geometry		Grade:	10	School: Richards Career Academy	
Created by:	Abigail Johnson				Date:	March 2019
Taught by:	Abigail Johnson				Unit length:	5 weeks (Semester 2 Weeks 5-9)

Stage 1: Desired Results

Established Goals: (3-6 standards)

Common Core State Standards (CCSS) Literacy: http://www.corestandards.org/ELA-Literacy; Math: http://www.corestandards.org/Math; NGSS for Science: http://www.nextgenscience.org/next-generation-science-standards

CCSS.MATH.CONTENT.HSG.CO.A.5

Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.

CCSS.MATH.CONTENT.HSG.CO.B.7

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.

CCSS.MATH.CONTENT.HSG.CO.B.8

Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.

Meaning

Enduring Understandings	Essential Questions
Rigid transformations (reflections, rotations, and translations) preserve congruence Comparing the corresponding parts of two figures can show that the figures are congruent, but two triangles can be proven congruent without showing ALL corresponding parts are congruent	How can you change a figure's position without changing its size and shape? How do you show that two triangles are congruent?

Learning Objectives: acquisition of knowledge and skills

Students will know…	Students will be able to…
• Reflections, rotations, and translations are rigid transformations that preserve size and shape • Congruent polygons are a one-to-one relationship between the corresponding congruent parts • The minimum number of parts of a triangle and their relationships to each other (SAS, ASA, SSS)	• Perform reflections over axes and the line y=x • Rotate a figure around a point in intervals of 90° • Translate an object in a plane and write a rule for the translation

that can be transformed to result in congruent triangles • AAA and SSA criteria do not necessarily create congruent triangles	• Determine the composition of rigid transformations that map two congruent polygons onto each other • Determine the minimum number of transformations that are needed to map one congruent polygon to another • Prove that two triangles are congruent using the SAS, ASA, and SSS theorems • Use compass and straightedge constructions to create two non-congruent triangles that satisfy AAA and SSA

Stage 2: Assessment Evidence

Summative Performance Task	**Other Evidence (formative, non-performance based assessments, rubric for performance task)**
Performance Task - week 6 - Superhero Transformations Project Proofs Quiz - end of week 8 Unit Test - end of week 9 - Flip Sliding Away, Rigid Motion, Isosceles Triangles (Problem 2 modified to be about congruence, Problem 4 modified to be AXY = YZC), and Borderline Pack	Math Core Insight Tool Task - week 7 - Points Equidistant From Two Points In The Plane GeoGebra Resource Formative Assessment Lesson - week 8 - Analyzing Congruency Proofs Ongoing - Problem Of the Month

Stage 3: Learning Plan

Learning Activities – (WHERE TO): What learning experiences and instruction will enable students to achieve the desired results?

Unit 2 Folder with all activities located here

Week 5:
Day 1: Introduce Transformations, partner drawing activity
Day 2: Notes on Reflections, guided practice. In-Class examples 1 and In-Class Examples 2
Day 3: Practice using Day 2 examples
Day 4: Introduce Rotations
Day 5: Rotations practice

Week 6:
Day 1: Practice Reflections and Rotations, introduce Translations
Day 2: Practice transformations, introduce Superhero Transformation Project
Day 3-5: Work on Superhero Project

Week 7:
Day 1: Introduce definition of triangle congruence, Side-Angle-Side theorem Student Version Teacher Version
Day 2: Practice with Side-Angle-Side Theorem (Key)
Day 3: Introduce and prove Isosceles Base Angle Theorem Student Lesson Outline Teacher Lesson Outline
Day 4: Practice proofs using Isosceles Base Angle Theorem (Key)
Day 5: Review: Finding missing angles Puzzles, MVMS Survey

Week 8:
Day 1: ASA and SSS Theorems, Practice (Key)
Day 2: SAA and HL Theorems
Day 3: Formative Assessment Lesson
Day 4: Formative Assessment Lesson, troubleshooting session
Day 5: Sub Plans, Fill-In-The-Blank Proofs Group Quiz

Week 9:
Day 1: Review Lines and Angles
Day 2: Review Rigid Transformations
Day 3: Review Triangle Congruence
Day 4: Q&A any additional topics, start Summative Assessment Tasks 1&2
Day 5: Summative Assessment Tasks 3&4

Stage 4: Post-Unit Reflection

What worked well? What were the challenges of this unit? What do you want to change for next time?