



Northside High School

Geometry Curriculum

Unit 4: Congruency & Similarity

Unit Length: 20 days

Domain: Congruence

- Cluster 2: Understand congruence in terms of rigid motions.
- Cluster 7: Apply and prove theorems involving similarity.

Standards:

- *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.
- 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 • Investigate congruence in terms of rigid motion to develop the criteria for triangle congruence (ASA, SAS, AAS, SSS, and HL).
- HSG.SRT.A.1:
 - Verify experimentally the properties of dilations given by a center and a scale factor • A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.
 - The dilation of a line segment is longer or shorter in the ratio given by the scale factor.
- *HSG.SRT.A.2:
 - Given two figures:
 - Use the definition of similarity in terms of similarity transformations to determine if they are similar.
 - Explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.
- HSG.SRT.A.3 :
 - Use the properties of similarity transformations to establish the AA~, SAS~, SSS~ criteria for two triangles to be similar.
- HSG.SRT.B.4 :
 - Use triangle similarity to apply and prove theorems about triangles.
- *HSG.SRT.B.5:
 - Use congruence (SSS, SAS, ASA, AAS, and HL) and similarity (AA~, SSS~, SAS~) criteria for triangles to solve problems.
 - Use congruence and similarity criteria to prove relationships in geometric figures.



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- HSG.CO.E.14:
 - Apply inductive reasoning and deductive reasoning for making predictions based on real world situations using:
 - Conditional Statements (inverse, converse, and contrapositive).
 - Venn Diagrams Note: This is not intended to be an isolated topic but instead to support concepts throughout the course.

**Guaranteed Viable Curriculum*

Vocabulary to Emphasize:

- Congruent.
- Corresponding.
- Angle.
- Side.
- Similar.
- Scale Factor.
- Ratio.
- Proportion
- Enlarge.
- Reduce.



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Unit 4: Part 1 Congruent Triangles

11 days

Essential questions: What does it mean to prove something in geometry? How does the definition of congruence help to solve geometric problem? How are relationships between triangles proven?

Learning Goal	Notes	Bellwork/Exit	Practice
Students will be able to identify corresponding parts of congruent triangles and write congruence statements.	Congruent Triangles Intro Notes.	BW: <ul style="list-style-type: none">Pre-assessment	Corresponding Parts Practice*. Pre-AP/Enrichment: Congruent Triangles Practice A and B. *resource from http://cdn.kutasoftware.com/Worksheets/Geo/4-Congruence%20and%20Triangles.pdf
Students will prove that two triangles are congruent using triangle congruence shortcuts.	Triangle Congruence Shortcut Notes.	BW: <ul style="list-style-type: none">Triangle Congruence #1.	Triangle Congruence Practice (Pre-AP section included)..
Students will analyze congruent triangle parts and determine which piece of information is not needed in order to prove the triangles are congruent.		BW: <ul style="list-style-type: none">Triangle Congruence #2..	Triangle Congruence Puzzle* *resource from http://kelsoemath.blogspot.com/2014/01/triangle-congruences-lesson.html Triangle Shortcut Practice. *resource from http://mathteachermambo.blogspot.com/2011/01/cpctc.html



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Learning Goal	Notes	Bellwork/Exit	Practice
Students will create congruent triangles based on given congruence statements.		BW: <ul style="list-style-type: none"> Triangle Congruence #3. Exit: <ul style="list-style-type: none"> •Which triangles are not congruent?* *markerboard or clicker activity.	Finish previous assignment. Congruent Triangles “Extra Info” Walk-around Activity and Student Answer Sheet* *adapted from http://www.mrsseteachesmath.com/2014/10/congruent-triangles-extra-infoactivity.html
Students will identify triangle congruence shortcut methods.		BW: <ul style="list-style-type: none"> Triangle Congruence #4. 	It’s A-Mazing Practice *resource from https://docs.google.com/a/roundrockisd.org/viewer?a=v&pid=sites&srcid=cm91bmRyb2NraXNkLm9yZ3xtcy1zb3NhfGd4OjcxMzU0M2I2MWM2NjZlYjI Practice with Triangle Congruence Methods* *resource from https://chssrstorfer.wikispaces.com/file/view/Get+Ready+-+Congruent+and+Similar+Triangles.pdf
Students will construct proofs to determine if two triangles are congruent.	Intro to Triangle Proofs Notes .	BW: <ul style="list-style-type: none"> Triangle Congruence #5. 	Congruent Triangles Proofs #1.
Students will construct proofs to determine if two triangles are congruent. *This will take 2-3 days	Steps to Triangle Proof Notes.	BW: <ul style="list-style-type: none"> Triangle Congruence #6. Triangle Congruence #7. 	Congruent Triangles Proofs Booklet* *resource from http://newellssecondarymath.blogspot.com/2016/08/triangle-congruence-proofsbook.html
Students will collaborate with peers to prove triangles are congruent.		BW: <ul style="list-style-type: none"> Triangle Congruence #8. 	Congruent Triangles Gallery Walk Proofs. *resource from http://newellssecondarymath.blogspot.com/2016/12/triangle-congruence-proofs.html



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Learning Goal	Notes	Bellwork/Exit	Practice
Students Will determine congruence shortcuts from pictures.		BW: <ul style="list-style-type: none">• Triangle Congruence #9..	SSS, SAS, ASA, and AAS practice (if needed) Right Triangle Congruence Practice (if needed) *resources from http://kutasoftware.com/freeige.html

CFA #1, Version 1: Triangle Congruence

CFA #1, Version 2: Triangle Congruence



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Unit 4: Part 2 Similarity

8 days

Essential questions: How are similar shapes related? How can you prove figures are similar?

Learning Goal	Notes	Bellwork/Exit	Practice
Students will use ratios and proportions to solve for unknown measurements.	Ratios & Proportions Foldable <small>*resource from http://newellssecondarymath.blogspot.com/2017/01/ratio-proportions-and-similar-polygons.html</small>	BW: <ul style="list-style-type: none">Pre-assessment	Ratio & Proportions Partner Activity* <small>*resource form http://newellssecondarymath.blogspot.com/p/classroomactivities.html</small>
Students will use ratios and proportions to solve for missing sides and angles in similar polygons.	<small>*resource from http://newellssecondarymath.blogspot.com/2017/01/ratio-proportions-and-similar-polygons.html</small>	Similarity #1	<small>*resource form http://newellssecondarymath.blogspot.com/p/classroomactivities.html</small>
Students will apply and discuss dilations as similarity transformations.		Similarity #2	Dilations Worksheet <small>*resource from Holt Geometry textbook and workbook pages</small>
Students will apply properties of similarity to real world problems.		Similarity #3	Similarity Scavenger Hunt OR Similarity Real World Practice <small>*These two are the same problems, just different format for teacher preference</small>
Students will prove triangles are similar by using shortcuts.	Similar Triangle Shortcuts Foldable Notes* <small>*resource from http://newellssecondarymath.blogspot.com/2016/01/similar-triangles-foldable.html?m=0</small>	Similarity #4	Similar Triangles Card Sort* <small>*resource from http://newellssecondarymath.blogspot.com/2016/01/similartriangles-foldable.html?m=0</small>



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Learning Goal	Notes	Bellwork/Exit	Practice
Students will prove triangles are similar by using shortcuts.		Similarity #5	Similar Triangles Shortcut Practice *resource from Holt Geometry textbook and workbook pages
Students will solve for missing measurements in triangles and write similarity statements.		Similarity #6	Kuta Similarity Practice with Algebra *resource form http://cdn.kutasoftware.com/Worksheets/Geo/7-Similar%20Triangles.pdf
Students will solve for missing measurements in triangles and write similarity statements.		Similarity #7	Finish Kuta Practice From Previous Day Whiteboard Unit Review

CFA #2, Version 1: Similarity

CFA #2, Version 2: Similarity

Unit 4 Common Summative Assessment

Unit 4 Pre-AP Summative Assessment



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Unit 4 previous learning: Where do I start/What should they know?

7.G.A.1	Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.
8.G.3	Describe the effect of dilations, translations, rotations, and reflections on two dimensional figures using coordinates.
8.G.5	Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.
8.G.4.A	Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.
8.G.1	Verify experimentally the properties of rotations, reflections, and translations: lines are taken to line, and line segments to line segments of the same length, angles are taken to angles of the same measure, parallel lines are taken to parallel lines. Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations: given two congruent figures, describe a sequence that exhibits the congruence between them. Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.