



Northside High School

Geometry Curriculum

Unit 5: Right Triangles

Unit Length: 15 days

Domain: Similarity, Right Triangles, and Trigonometry

- Cluster 7: Apply and prove theorems involving similarity.
- Cluster 8: Define trigonometric ratios and solve problems involving right triangles.
- Cluster 9: Apply trigonometry to general triangles.

Standards:

- SRT.B.4:
 - Use triangle similarity to apply and prove theorems about triangles.
- HSG.SRT.C.6:
 - Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.
- HSG.SRT.C.7:
 - Explain and use the relationship between the sine and cosine of complementary angles.
- *HSG.SRT.C.8:
 - Use trigonometric ratios, special right triangles, and the Pythagorean Theorem to find unknown measurements of right triangles in applied problems.
- (+)*SRT.D.11 :
 - Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles.
- 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*

(+) Pre-Ap Standard



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Vocabulary to Emphasize:

- Angle.
- Side.
- Right Angle.
- Hypotenuse.
- Leg.
- Opposite.
- Adjacent.
- Ratio.
- Angle of Elevation.
- Angle of Depression.



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Unit 5: Part 1 Pythagorean Theorem & Special Right Triangles

10 days

Essential question: What relationships occur in special right triangles?

Learning Goal	Notes	Bellwork/Exit	Practice
Students will be able to solve for missing sides of right triangles using the Pythagorean Theorem.	Pythagorean Theorem Flipbook *resource from http://newellssecondarymath.blogspot.com/2017/01/2016-2017-right-triangles-unit.htm	BW: <ul style="list-style-type: none">• Pre-assessment.	
Students will be able to solve for missing sides of right triangles using the Pythagorean Theorem.	Triangle Congruence Shortcut Notes.	BW: <ul style="list-style-type: none">• Triangles #1.	Pythagorean Theorem Scavenger Hunt.
Students will use side lengths of triangles to solve and classify the type of triangle.	Converse of the Pythagorean Theorem Foldable* *resource from http://newellssecondarymath.blogspot.com/2017/01/2016-2017-right-triangles-unit.html	BW: <ul style="list-style-type: none">• Triangles #2.	Pythagorean Theorem Converse Worksheet.
Students will use side lengths of triangles to solve and classify the type of triangle.		BW: <ul style="list-style-type: none">• Triangles #3.	Converse of the Pythagorean Theorem Organizer* & Card Sort for Organizer* *resource from http://newellssecondarymath.blogspot.com/2017/01/2016-2017-right-triangles-unit.html



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Learning Goal	Notes	Bellwork/Exit	Practice
Students will discover the properties of 45-45-90 special right triangles and solve for unknown measurements.	45-45-90 Special Right Triangles Investigation* 45-45-90 Special Right Triangles Frayer Notes* (first page needs re-done) *resource from http://newellssecondarymath.blogspot.com/2017/01/2016-2017-right-triangles-unit.html		
Students will discover the properties of 30-60-90 special right triangles and solve for unknown measurements.	30-60-90 Special Right Triangles Investigation* 30-60-90 Special Right Triangles Frayer Notes* *resource from http://newellssecondarymath.blogspot.com/2017/01/2016-2017-right-triangles-unit.htm	BW: <ul style="list-style-type: none">Triangles #5..	30-60-90 Special Right Triangles Chart* *resource from http://newellssecondarymath.blogspot.com/2017/01/2016-2017-right-triangles-unit.htm
Students will apply the properties of special right triangles to solve for unknown sides.		BW: <ul style="list-style-type: none">Triangles #6.	Special Right Triangles Color by Number Activity* *resource from http://newellssecondarymath.blogspot.com/p/classroom-activities.html Special Right Triangle Practice Problems* *free resource from https://www.teacherspayteachers.com/FreeDownload/Special-Right-Triangles-InteractiveNotebook-Page-2039624 Kuta Special Right Triangles Practice* *resource from https://cdn.kutasoftware.com/Worksheets/Geo/8-Special%20Right%20Triangles.pdf (won't have time for all of these and they can carry on to the next day or so).



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Learning Goal	Notes	Bellwork/Exit	Practice
Students will solve for missing measurements in triangles.		BW: <ul style="list-style-type: none">Triangles #7.	IXL Practice Geometry: Q.1.
Students will solve for missing measurements in triangles.		BW: <ul style="list-style-type: none">Triangles #8.	
Students will solve for missing measurements in triangles.		BW: <ul style="list-style-type: none">Triangles #9.	IXL Practice Geometry: Q.4.

CFA #1, Version A: Pythagorean Theorem.

CFA #1, Version B: Pythagorean Theorem.



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Unit 5: Part 2 Trigonometry

10 days

Essential questions: What ratios exist in right triangles? How can we apply these ratios to solve for unknown measures?

Learning Goal	Notes	Bellwork/Exit	Practice
Students will apply trig ratios to find ratios in triangles and to solve for missing parts of triangles.	Trig Notes Part 1. Trig Notes Part 2.	BW: <ul style="list-style-type: none">Pre-assessment.	Trig Ratios Puzzle Activity.
Students will apply trigonometry to solve for missing sides of right triangles.	Continue Trig Notes Part 2 (Solving Equations Part).	BW: <ul style="list-style-type: none">Trig #1.	Scavenger Hunt to be used with Kuta Worksheet.* (Scavenger Hunt- Shorter Option). *Resource found at: https://cdn.kutasoftware.com/Worksheets/Alg1/Trigonometry%20To%20Find%20Lengths.pdf Extra practice if needed: Guided Practice Sheet- to be used with the notes.
Students will apply trigonometry to solve for missing angles in right triangles.		BW: <ul style="list-style-type: none">Trig #2.	Using Trigonometry to Find Angle Measures Worksheet.* Not all problems will be necessary, use as needed. *Resource found at: https://cdn.kutasoftware.com/Worksheets/Alg1/Trigonometry%20to%20Find%20Angle%20Measures.pdf



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Learning Goal	Notes	Bellwork/Exit	Practice
Students will use trigonometric properties to solve for unknown measurements in a right triangle.		BW: <ul style="list-style-type: none"> Trig #3. 	Trig Word Problems.
Students will use trigonometric properties to solve for unknown measurements in a right triangle.		BW: <ul style="list-style-type: none"> Trig #4. 	Trigonometry Worksheet.
Students will explore angles of elevation and angles of depression.	Angle of Elevation & Depression Notes Part One. Angle of Elevation & Depression Notes Foldable. <small>*resource from http://newellssecondarymath.blogspot.com/2017/01/2016-2017-righttriangles-unit.html</small>	BW: <ul style="list-style-type: none"> Trig #5. Exit: <ul style="list-style-type: none"> CFA question. 	Angle of Elevation and Depression Worksheet (First page).
Students will use angles of elevation and angles of depression to solve for unknown measurements in right triangles.		BW: <ul style="list-style-type: none"> Trig #6. 	Angle of Elevation and Depression Worksheet (Back page). Create Your Own Trig Project.
Students will use angles of elevation and angles of depression to solve for unknown measurements in right triangles.		BW: <ul style="list-style-type: none"> Trig #7. Exit: <ul style="list-style-type: none"> CFA question. 	Practice Drawing Trig Problems. (on whiteboards, or you can print off as a worksheet).
Students will use angles of elevation and angles of depression to solve for unknown measurements in right triangles.		BW: <ul style="list-style-type: none"> Trig #8. 	Crazy (Prepare yourself lol) Angle of Elevation. Depression Stations & Station Answer Key.



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Learning Goal	Notes	Bellwork/Exit	Practice
Students will solve for missing measurements in a right triangle using the Pythagorean Theorem and trigonometry.		BW: <ul style="list-style-type: none">Trig #9.	Unit Review (this is attached in the same flipchart as bellwork 'Trig #9', just go to the next page).

CFA #2, Version A: Trigonometry.

CFA #2, Version B: Trigonometry.

CFA #3, Version A: Angle of Elevation & Depression CFA #3, Version B: Angle of Elevation & Depression.

Unit 5 Common Summative Assessment.



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Pre- AP Unit 5: Part 1 Pythagorean Theorem & Special Right Triangles

5 days

Essential questions: What relationships occur in special right triangles?

Learning Goal	Notes	Bellwork/Exit	Practice
Students will be able to solve for missing sides of right triangles using the Pythagorean Theorem.	Pythagorean Theorem Flipbook.	BW: <ul style="list-style-type: none">Pre-assessment.	Pythagorean Theorem Scavenger Hunt (if needed/ if time allows).
Students will use side lengths of triangles to solve and classify the type of triangle.	Converse of the Pythagorean Theorem Foldable.	BW: <ul style="list-style-type: none">Triangles #1.	Pythagorean Theorem Converse Worksheet and/or Converse of the Pythagorean Theorem Organizer. Card Sort for Organizer.
Students will discover the properties of 45-45-90 and 30-60- 90 special right triangles and solve for unknown measurements unknown sides.	Special Right Triangles Discovery and Chart *resource found at: http://newellssecondarymath.blogspot.com/2016/01/better-questions-special-right-triangles.html	BW: <ul style="list-style-type: none">Triangles #3.	Special Right Triangles Practice.* *Resource found at: http://newellssecondarymath.blogspot.com/2017/01/2016-2017-right-triangles-unit.html
Students will apply the properties of special right triangles to solve for unknown sides.		BW: <ul style="list-style-type: none">Triangles #4.	Applying Special Right Triangles. *resource from Holt Geometry textbook and workbook pages

CFA #1, Version A: Pythagorean Theorem.

CFA #1, Version B: Pythagorean Theorem.



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Pre-AP Unit 5: Part 2 Trigonometry and Law of Sines/Law of Cosines

15 days

Learning Goal	Notes	Bellwork/Exit	Practice
Students will explore and discover why trigonometric ratios work.	Exploring Trigonometric Ratios: Discovery lesson.	BW: <ul style="list-style-type: none">Pre-assessment.	
Students will apply trig ratios to find ratios in triangles and to solve for missing parts of triangles.	Trig Notes Part 1. Trig Notes Part 2.	BW: <ul style="list-style-type: none">Trig #1.	Guided Practice Sheet- to be used with notes. Part 1 and Part 2 Trig Ratio Puzzle Activity Homework: Trig Ratio Practice.* <small>*resource from Holt Geometry textbook and workbook pages</small>
Students will apply trig ratios to solve for missing sides of triangles.	Continue Trig Notes Part 2.	BW: <ul style="list-style-type: none">Trig #2.	Scavenger Hunt to be used with Kuta Worksheet* (Scavenger Hunt- Shorter Option). <small>*Resource found at: https://cdn.kutasoftware.com/Worksheets/Alg1/Trigonometry%20To%20Find%20Lengths.pdf</small>
Students will apply trig ratios to solve for missing sides and angles of triangles.		BW: <ul style="list-style-type: none">Trig #3.	Using Trigonometry to Find Angle Measures Worksheet* (use as marker board activity!!!). Not all problems will be necessary, use as needed. *Resource found at: https://cdn.kutasoftware.com/Worksheets/Alg1/Trigonometry%20to%20Find%20Angle%20Measures.pdf Trigonometry- Mixed



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			Problems.
Learning Goal	Notes	Bellwork/Exit	Practice
Students will apply multiple trig ratios and Pythagorean Theorem to solve for missing sides and angles of triangles.		BW: <ul style="list-style-type: none"> Trig #4. 	Trigonometry Multi-Step Problems.* <small>*resource from Holt Geometry textbook and workbook pages</small>
Students will apply angles of elevation and angles of depression to solve for unknown measurement s in right triangles.	Angle of Elevation & Depression Notes Part One. Angle of Elevation & Depression Notes Foldable. <small>*resource from http://newellssecondarymath.blogspot.com/2017/01/2016-2017-right-triangles-unit.htm</small>	BW: <ul style="list-style-type: none"> Trig #5. Exit: <ul style="list-style-type: none"> CFA question. 	Angle of Elevation and Depression Worksheet. Assign Create Your Own Trig Project.
Students will apply angles of elevation and angles of depression to solve for unknown measurement s in right triangles.		BW: <ul style="list-style-type: none"> Trig #6. 	Crazy (Prepare yourself lol) Angle of Elevation & Depression Stations. Station Answer Key
Students will apply angles of elevation and angles of depression to solve for unknown measurement s in right triangles.		BW: <ul style="list-style-type: none"> Trig #7. Exit: <ul style="list-style-type: none"> CFA question. 	Word Problems with Addition and Subtraction.
Students will explore and discover the Law of Sines and Cosines, and how it relates to prior learning.	Discovery of Law of Sines/Law of Cosines. <small>*Resource found at: https://illuminations.nctm.org/unit.aspx?id=6507</small>	BW: <ul style="list-style-type: none"> Trig #8. 	
Students will apply Law of Sines and Law of Cosines to solve for missing parts of non-right triangles.	Law of Sines/Law of Cosines Notes. <small>*Resource found at: https://www.teacherspayteachers.com/Product/TrianglesInteractive-Notes-1224757</small>	BW: <ul style="list-style-type: none"> Law of Sines and Cosines Bellwork #1-6. 	Law of Sines and Cosines Practice A. <small>*resource from Holt Geometry textbook and workbook pages</small>



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Learning Goal	Notes	Bellwork/Exit	Practice
Students will apply Law of Sines and Law of Cosines to solve for missing parts of non-right triangles.		BW: <ul style="list-style-type: none">• Law of Sines and Cosines Bellwork #1-6.	Law of Sines and Cosines Practice B. *resource from Holt Geometry textbook and workbook pages
Students will apply Law of Sines and Law of Cosines to word problems to solve for missing parts of non-right triangles.		BW: <ul style="list-style-type: none">• Law of Sines and Cosines Bellwork #1-6.	Law of Sines and Cosines Word Problems. Law of Sines and Cosines Challenge Problems.
Students will apply Law of Sines and Law of Cosines to solve for missing parts of non-right triangles.		BW: <ul style="list-style-type: none">• Law of Sines and Cosines Bellwork #1-6.	IXL Geometry R.11, R.12, R.13.
Students will apply Law of Sines and Law of Cosines to solve for missing parts of non-right triangles.		BW: <ul style="list-style-type: none">• Law of Sines and Cosines Bellwork #1-6.	IXL Geometry R.11, R.12, R.13.

CFA #2, Version A: Trigonometry.

CFA #2, Version B: Trigonometry.

CFA #3, Version A: Angle of Elevation & Depression.

CFA #3, Version B: Angle of Elevation & Depression.



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Unit 5 previous learning: Where do I start/What should they know?	
8.G.B.7	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.

8.G.B.7

Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.