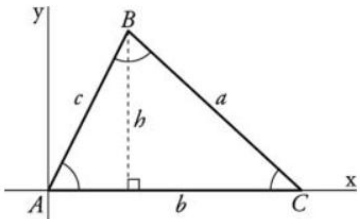
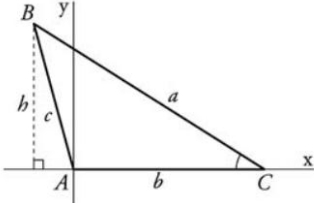


Core Content

Cluster Title: Apply trigonometry to general triangles
Standard G.SRT.9: Derive the formula $A = \frac{1}{2} ab \sin(C)$ for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.
Concepts and Skills to Master
<ul style="list-style-type: none"> Derive the formula $A = \frac{1}{2} ab \sin(C)$ for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.

Supports for Teachers

Critical Background Knowledge	
<ul style="list-style-type: none"> Trigonometric ratios Area of a triangle 	
Academic Vocabulary	
auxiliary line, vertex, perpendicular	
Suggested Instructional Strategies	Resources
<ul style="list-style-type: none"> Derive the formula for the area of a triangle using the figures below. <div style="display: flex; justify-content: space-around; align-items: center;">   </div>	
Sample Formative Assessment Tasks	
<p>Skill-Based Task: The two sides of a triangle are 4 cm and 5 cm, and the included angle is 32 degrees. Find the area of the triangle.</p>	<p>Problem Task: Express the area of any triangle in terms of the sides and angles.</p>

Core Content

Cluster Title: Apply trigonometry to general triangles.
Standard G.SRT.10: Prove the Laws of Sines and Cosines and use them to solve problems.
Concepts and Skills to Master
<ul style="list-style-type: none"> • Prove the Law of Sines. • Prove the Law of Cosines. • Use the Law of Sines and the Law of Cosines to solve problems.

Supports for Teachers

Critical Background Knowledge	
<ul style="list-style-type: none"> • Right-triangle trigonometry 	
Academic Vocabulary	
included angle, opposite side, opposite angle	
Suggested Instructional Strategies	Resources
<ul style="list-style-type: none"> • Explore different ways to prove the Law of Cosines and the Law of Sines. • Using Geometer's Sketchpad, verify the Law of Sines and the Law of Cosines. 	
Sample Formative Assessment Tasks	
Skill-Based Task:	Problem Task:
Write a paragraph proof of the Law of Sines.	Derive the Law of Sines from the formula for the area of a non-right triangle.

Core Content

Cluster Title: Apply trigonometry to general triangles
Standard G.SRT.11: Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).
Concepts and Skills to Master
<ul style="list-style-type: none"> Use the Law of Sines or the Law of Cosines to find unknown measures in triangles.

Supports for Teachers

Critical Background Knowledge	
<ul style="list-style-type: none"> Use inverse trigonometric functions to find angle measures. 	
Academic Vocabulary	
ambiguous case	
Suggested Instructional Strategies	Resources
<ul style="list-style-type: none"> Help students establish criteria for using Law of Cosines or the Law of Sines. Use context problems for construction and other careers. 	
Sample Formative Assessment Tasks	
<p>Skill-Based Task:</p> <p>Find all the measurements in triangle ABC, given $C = 62^\circ$, $A = 17^\circ$, and $a = 1$ inch.</p> <p>Find all the measurements in triangle ABC, given $a = 20$, $c = 24$, and $B = 47^\circ$</p>	<p>Problem Task:</p> <p>A radio station located adjacent to I-15 is 10 miles from where it connects to I-70. The angle between the two interstates is 48°. The station can broadcast for a range of 7 miles. If Bryce is driving on I-70, between what two distances from the intersection of the two highways can he receive the radio signal?</p>