Deriving Triangle Area Formula

Today's Standard

HSG.SRT.D9 - (+) Derive the formula A = 1/2 ab sin(C) for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.

Cues	Notes
What is the formula for the area of a triangle using sine?	The formula is A = 1/2 ab sin(C).
How do you derive the formula A = 1/2 ab sin(C)?	Draw an auxiliary line from a vertex perpendicular to the opposite side to create two right triangles. Use trigonometric ratios to express the height in terms of the sides and angle C.
What is an auxiliary line?	An auxiliary line is an extra line drawn to help solve a problem or prove a theorem.
Why is the sine function used in this formula?	The sine function relates to the height of the triangle when the auxiliary line is drawn, making it essential for this derivation.

Summary

The standard involves deriving the formula A = 1/2 ab sin(C) for the area of a triangle using an auxiliary line. Understanding this derivation helps in solving complex geometric problems and reinforces trigonometric concepts.