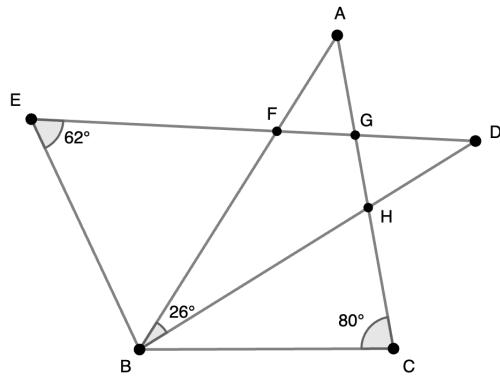


In the figure below, ABC and DEB are triangles. $\angle BAC = \angle EDB$, and $\angle ABC = \angle DEB$. Additionally, point F is the intersection of segments AB and DE , point G is the intersection of segments AC and DE , and point H is the intersection of segments BC and BD . Find the measure of $\angle AGF$.¹



¹Okayama Prefecture

Solution

Answer : 78°

Proof: $\angle A = 180^\circ - \angle ABC - \angle ACB = 180^\circ - \angle DEB - 80^\circ = 180^\circ - 62^\circ - 80^\circ = 38^\circ$. Therefore, $\angle D = \angle A = 38^\circ$. $\angle AGD = \angle ABD + \angle A + \angle D = 26^\circ + 38^\circ + 38^\circ = 102^\circ$, Finally, $\angle AGF = 180^\circ - \angle AGD = 180^\circ - 102^\circ = 78^\circ$.