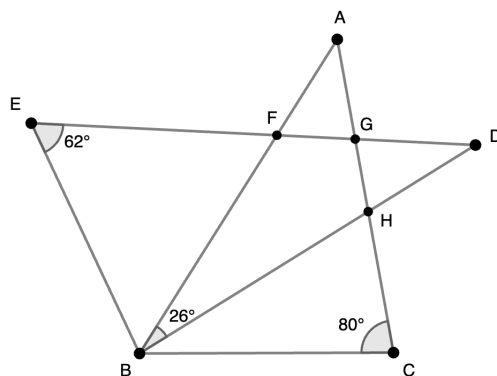


In the figure below,  $ABC$  and  $DEB$  are triangles.  $\angle BAC = \angle EDB$ , and  $\angle ABC = \angle DEB$ . Additionally, point  $F$  is the intersection of segments  $AB$  and  $DE$ , point  $G$  is the intersection of segments  $AC$  and  $DE$ , and point  $H$  is the intersection of segments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




---

<sup>1</sup>Okayama Prefecture

## Solution

*Answer* :  $78^\circ$

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,  $\angle \mathbf{AGF} = \mathbf{180^\circ - \angle AGD = 180^\circ - 102^\circ = 78^\circ}$ .