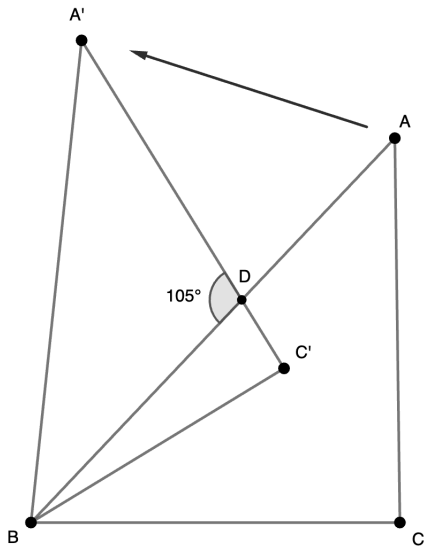
Triangle ABC is rotated 23° counterclockwise around B, giving the transformed triangle $A'BC'$. The intersection of AB and $A'C'$ is shown by D, and $\angle A'DB$ is 105°. Find the measure of $\angle A$.[1]



[1]Tokyo Aoyama Gakuin High School, Tokyo

Solution

Answer : 52°

Proof: We know that $\angle ABA' = 23^\circ$, so $\angle \mathbf{A} = \angle \mathbf{A'} = \mathbf{180}^\circ - \mathbf{105}^\circ - \mathbf{23}^\circ = \mathbf{52}^\circ$.