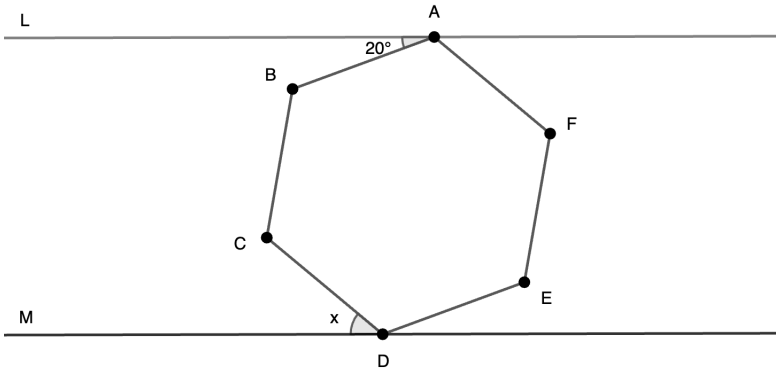
In the figure below, hexagon $ABCDEF$ is a regular hexagon, and Points A and D lie on parallel lines L and M, respectively. Find the measure of $\angle x$.[1]



[1] Wakayama Prefecture

Solution

Answer : 40°

Proof: Given that an interior angle of a regular hexagon is 120°, $\angle BAD = \angle FAD = \angle CDA = 60^\circ$. If we were to create Point G on line l and to the right of A, $\angle GAD = 180^\circ - 20^\circ - 60^\circ = 100^\circ$. Since alternate interior angles are congruent, $\angle x + \angle CDA = \angle GAD$. Substituting the appropriate values we get: $\angle \mathbf{x} = \mathbf{100}^\circ - \mathbf{60}^\circ = \mathbf{40}^\circ$.