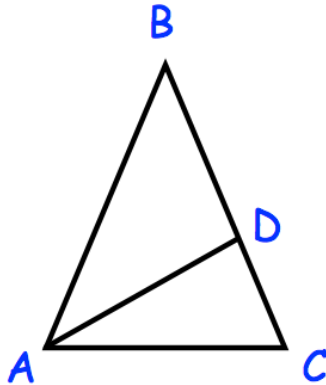


August 21st

In the diagram, AD bisects angle BAC.
 $BD = AD = AC$

Find the size of angle ABC.



Let $\widehat{ABC} = \theta$

$\therefore \widehat{BAD} = \theta$ (2 angles in an isosceles triangle are equal)

$\therefore \widehat{BDA} = 180 - 2\theta$ (angles in a triangle add up to 180)

$\therefore \widehat{ADC} = 2\theta$ (angles on a straight line add up to 180)

$\therefore \widehat{BCA} = 2\theta$ (2 angles in an isosceles triangle are equal)

$\therefore \widehat{CAD} = 180 - 4\theta$ (angles in a triangle add up to 180)

$$\widehat{BAC} = \widehat{BAD} + \widehat{CAD} = 180 - 3\theta$$

Now since $\widehat{BAC} = \widehat{BCA}$

$$180 - 3\theta = 2\theta$$

Hence

$$\theta = \widehat{ABC} = 36^\circ$$