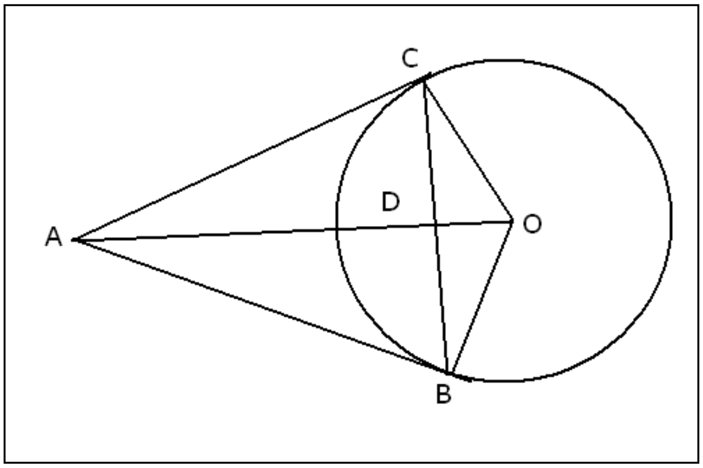
Answer 120.



$\angle ACO = 90°$ (angle between radius and tangent)

In right ΔACO,

$AO^2 = AC^2 + OC^2$ (Pythagoras theorem)

$(2r)^2 = AC^2 + r^2$ (AO = diameter given)

$4r^2 - r^2 = AC^2$

$AC^2 = 3r^2$

$AC = \sqrt{3}\, r$

$\Delta ODC \sim \Delta OCA$ by AA corollary

$$\frac{DC}{CA} = \frac{OC}{OA}$$

$$\frac{DC}{\sqrt{5}r} = \frac{r}{2r}$$

$$DC = \frac{\sqrt{3}}{2} r$$

$2DC = \sqrt{3}r$

$BC = \sqrt{3}r$

Now in ΔABC $AC = AB = BC = \sqrt{3}r$

Therefore ΔABC is equilateral