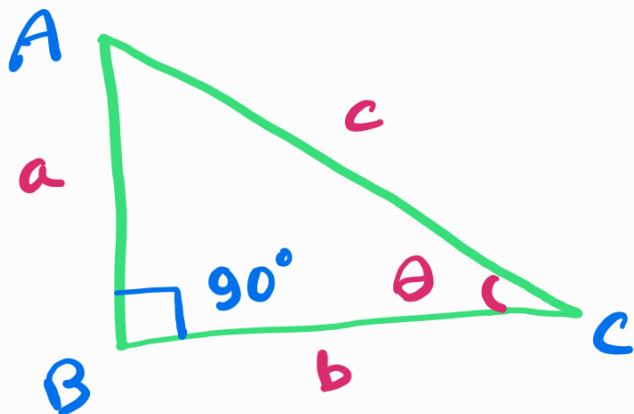


Trigonometry - Angles



Trigonometry is the study of angles and sides of right-angle triangle.

with respect to the angle θ

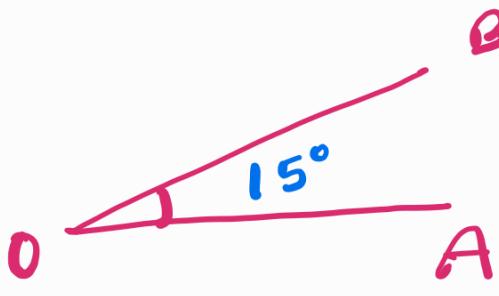
AB = Opposite side = a

BC = Adjacent side = b

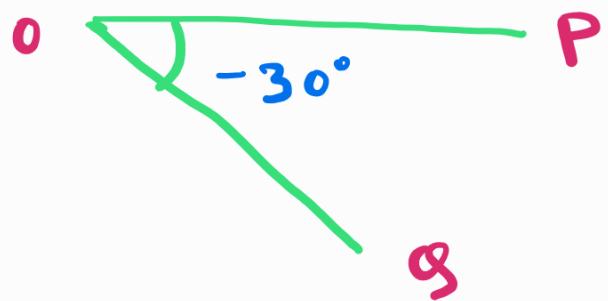
AC = hypotenuse = c

AC is the longest side.

As per Pythagoras theorem: $a^2 + b^2 = c^2$



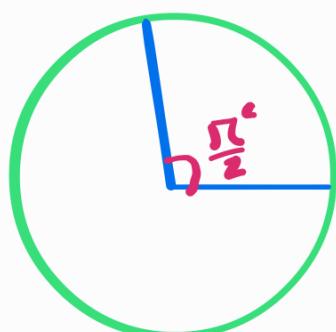
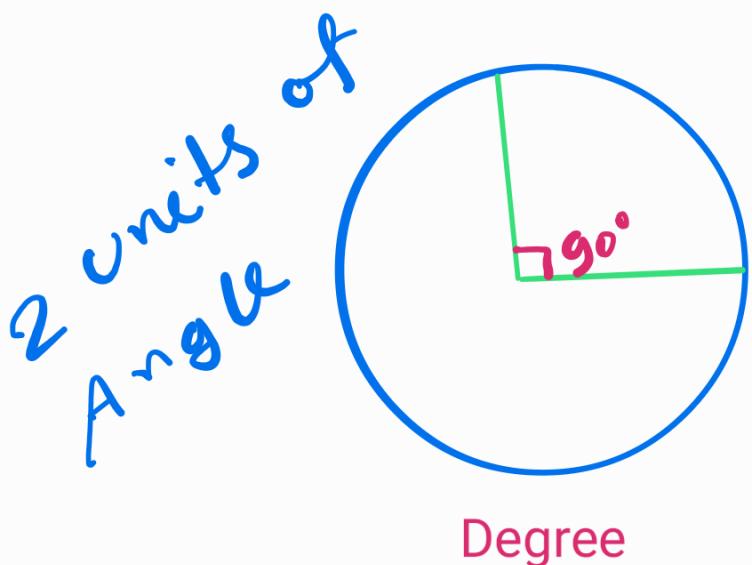
positive angle
Anti-clockwise



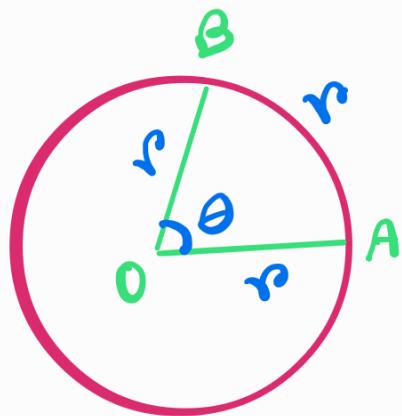
Negative Angle
clockwise

on a 2-D plane angle

can be from 0° to 360° in Geometries. But in Trigonometry
angles may be more than 360°

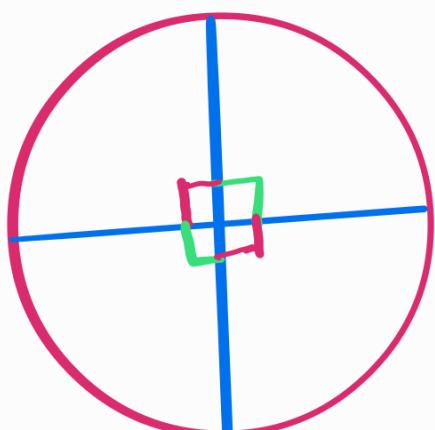


Radian



If the arc length is equal to the radius then the angle made by that arc in the centre is equal to 1 radian

$$\theta = \frac{AB}{r} = \frac{\text{arc length}}{\text{radius}}$$



The circle makes 4 Numbers of 90° angles at the Centre.
So total angle is 360°

In radian the angle

$$\theta = \frac{\text{Total arc length}}{\text{radius}} = \frac{\text{whole circle}}{\text{radius}}$$
$$= \frac{\text{total Circumference}}{\text{Radius}}$$
$$= \frac{2\pi r}{r} = 2\pi$$

Therefore $360^\circ = 2\pi$ radian

$$1^\circ = \frac{2\pi}{360} \text{ radian}$$

$$1^\circ = \frac{\pi}{180} \text{ radian}$$

Example:

$$30^\circ = ? \text{ radian}$$

Multiply $\frac{\pi}{180}$ with Degree to get radian

$$\begin{aligned} \text{So, } 30^\circ &= 30 \times \frac{\pi}{180} \text{ radian} \\ &= \frac{\pi}{6} \text{ radian} \end{aligned}$$