

A wheel of radius 120cm has two different marks on its rim. The distance along the rim between the mark is 40cm. Find the angle subtended at the center of the wheel by the marks. Give your answer in radian, degrees and revolutions.

**Solution**

The distance along the rim between the mark:

$$l = \alpha * R$$

where  $\alpha$  (in radians) is the angle subtended at the center of the wheel by the marks, R – a radius of the rim.

$$\text{So } \alpha = \frac{l}{R} = \frac{40}{120} = \frac{1}{3} \approx 0.33 \text{ radians.}$$

$$\alpha(\text{degrees}) = \alpha(\text{radians}) * \frac{360^\circ}{2\pi} = \frac{1}{3} * \frac{360^\circ}{2\pi} = 19^\circ.$$

$$\alpha(\text{revolutions}) = \frac{\alpha(\text{radians})}{2\pi} = \frac{1}{3} * \frac{1}{2\pi} = 0.05 \text{ revolutions.}$$

**Answer: 0.33 rad; 19°; 0.05 rev.**