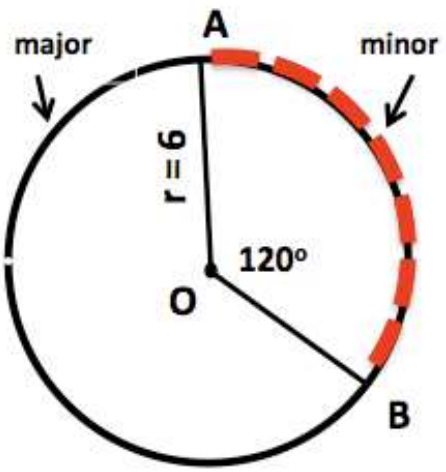
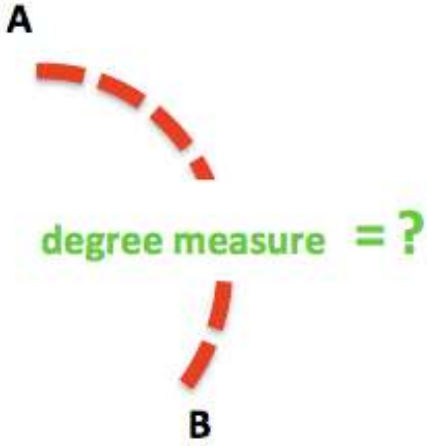
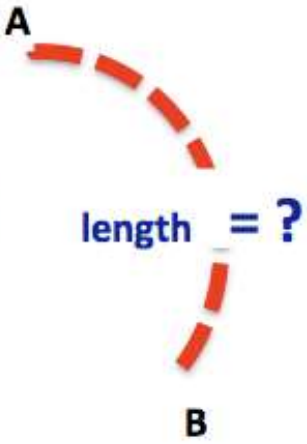
Circles: Arc Measurement & Arc Length

Arcs can be measured in two ways: ***degree measure*** and ***length.***

EXAMPLE: Find the degree measure & length of minor arc AB.







SOLUTION:

a) The measure (°) of an arc equals the measure of its central angle.

$$m\,\widehat{AB} = 120^\circ$$

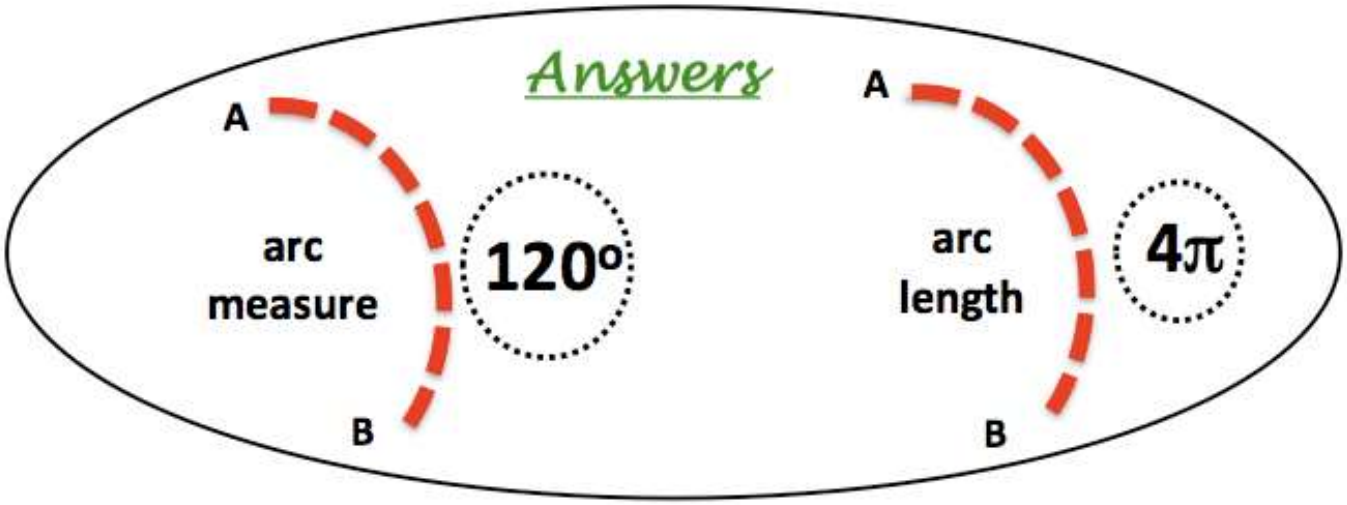
b) To find the length of an arc, find the circumference of the circle and multiply it by the quotient of the arc measure and 360°.

Circumference = $2\pi(6) = 12\pi$

Length arc AB = $12\pi\ (120/360) = 1/3(12\pi) = \mathbf{4\pi}$

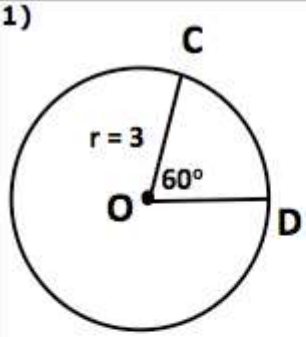
$$\text{Length } \widehat{AB} = 4\pi$$

Answers



EXERCISES

1)

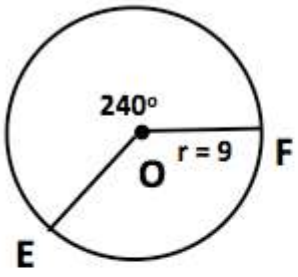


a. What is the measure of minor arc CD?

$m\widehat{CD} =$

b. Find the length of minor arc CD.

2)

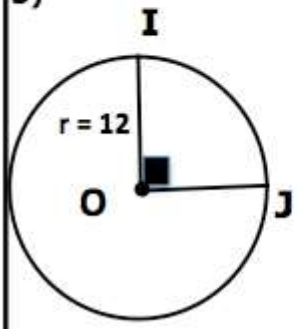


a. What is the measure of major arc EF?

$m\widehat{EF} =$

b. Find the length of major arc EF.

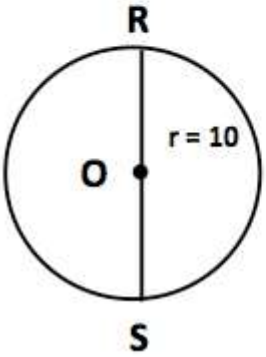
3)



a. What is the measure of minor arc IJ?

b. Length minor arc IJ =

4)



a. What is the measure of arc RS?

b. Length arc RS =

c. Is arc RC minor, major or semi-circle?

5)

⊙K shown. Write whether arc listed is minor, major or semi-circle.

a. $\widehat{EF}$ _____

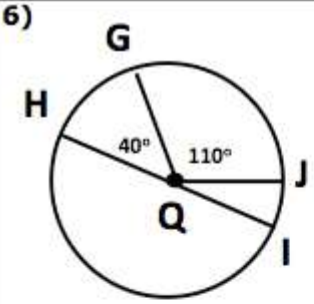
b. $\widehat{GH}$ _____

c. $\widehat{HFE}$ _____

d. $\widehat{FEG}$ _____

e. $\widehat{GHF}$ _____

6)



⊙Q Shown. Find the measure of each arc.

a. $\widehat{HG}$ _____

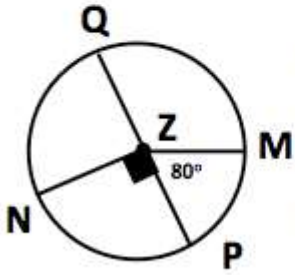
b. $\widehat{GJ}$ _____

c. $\widehat{JI}$ _____

d. $\widehat{HGJ}$ _____

e. $\widehat{HI}$ _____

7)



⊙Z shown. Find the measure of each arc.

a. $\widehat{MP}$ _____

b. $\widehat{NP}$ _____

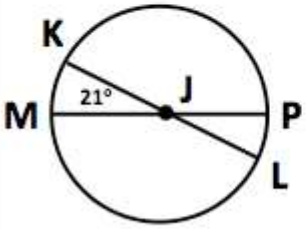
c. $\widehat{NQ}$ _____

d. $\widehat{PNQ}$ _____

e. $\widehat{MQ}$ _____

f. $\widehat{MPN}$ _____

8)



⊙J Shown. Find the measure of each arc.

a. $\widehat{MK}$ _____

b. $\widehat{PL}$ _____

c. $\widehat{KP}$ _____

d. $\widehat{ML}$ _____

e. $\widehat{MLP}$ _____

f. $\widehat{MKL}$ _____