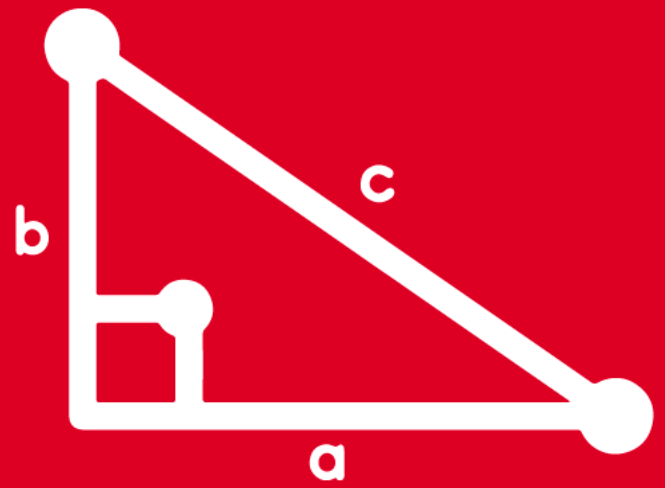
TRIGONOMETRY

Chapter 03



2nd
SECONDARY

Sector Circular

SACO OLIVEROS

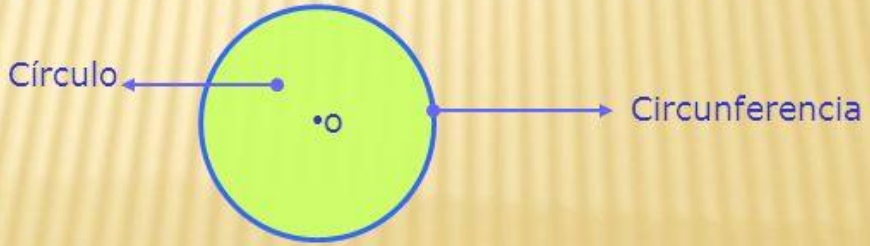
1. Definición

1.1 Circunferencia

Línea curva, cerrada y plana, cuyos puntos equidistan (igual distancia) de un punto fijo llamado centro.

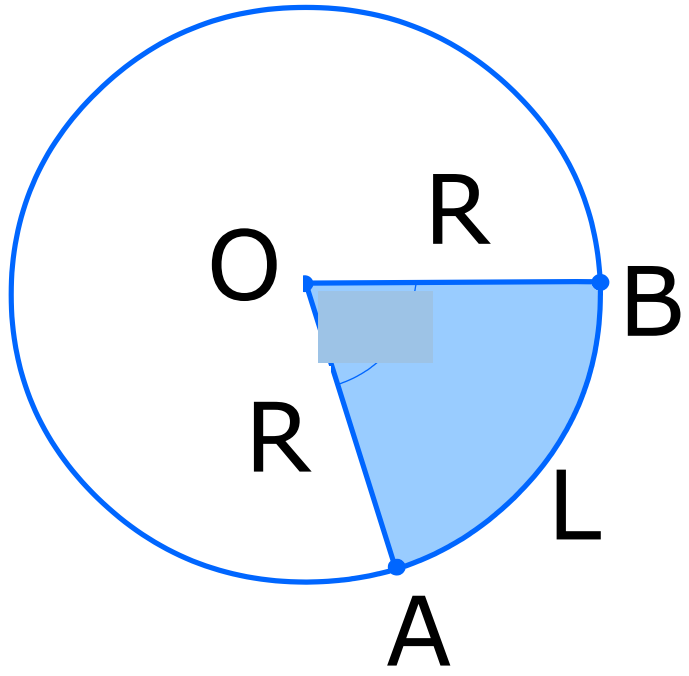
1.2 Círculo

Región del plano limitado por una circunferencia



SECTOR CIRCULAR

Región circular limitada por dos radios y el arco de correspondiente.



Donde:

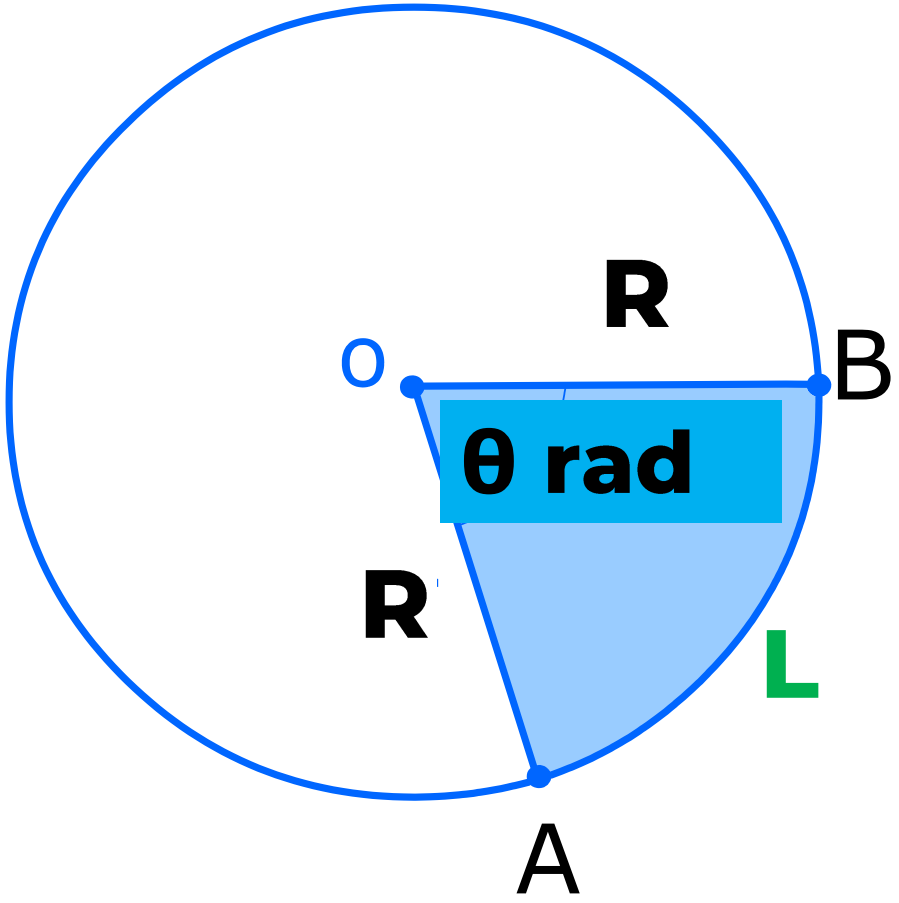
$(\lozenge AOB)$: **Sector circular AOB**

R : **radio de la circunferencia**

L : **Longitud** $\overset{\frown}{AB}$

LONGITUD DE ARCO

Donde:



L : Longitud $\overset{\frown}{AB}$

θ : Medida del ángulo central (en radianes)

R : Longitud del radio de la circunferencia

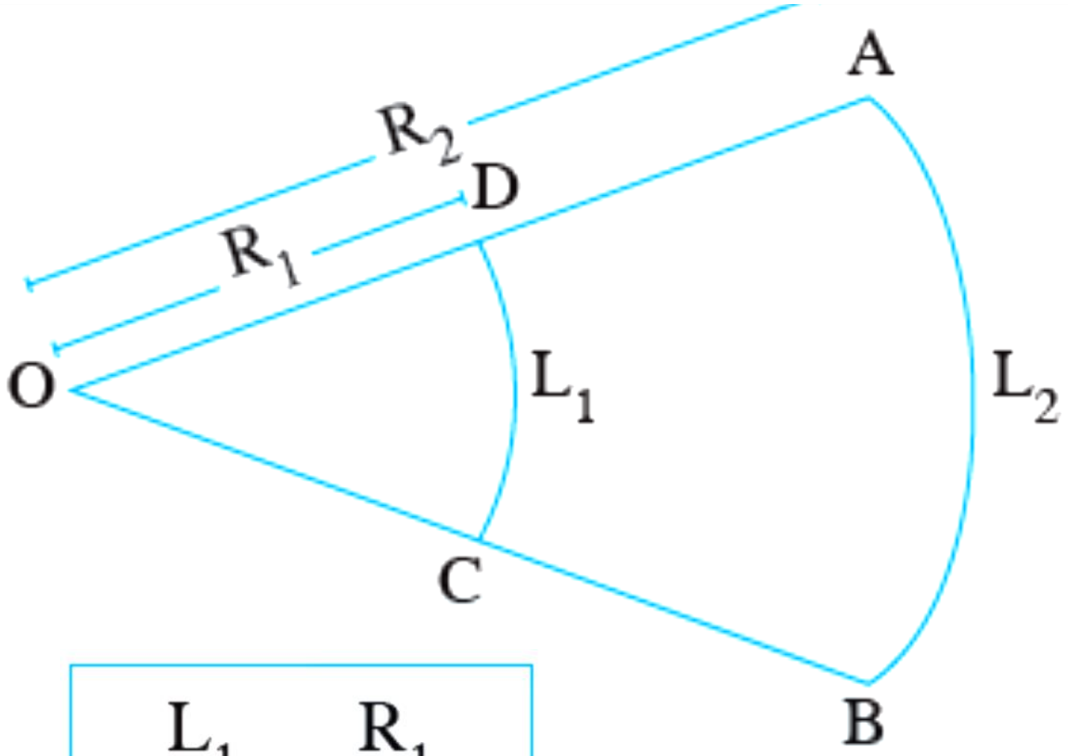
Se cumple:

$$L = \theta \times R$$

$$0 < \theta \leq 2\pi$$

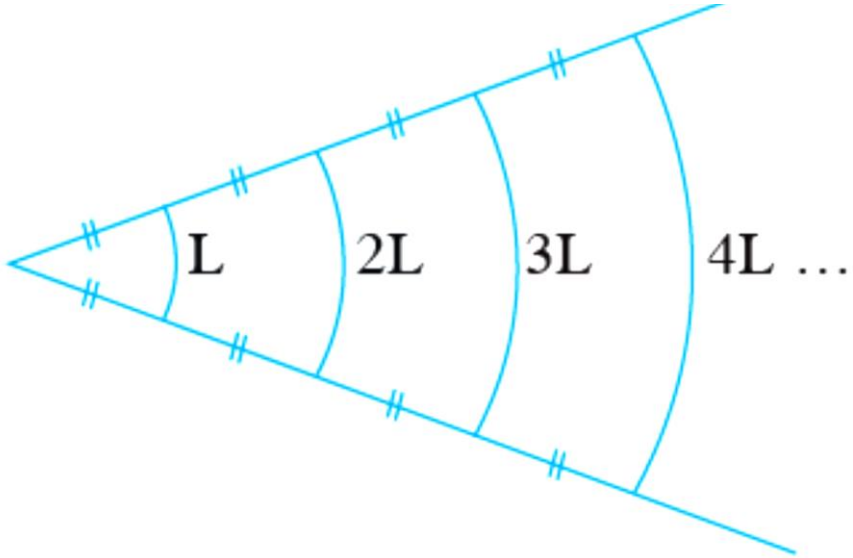
PROPIEDADES

PROPIEDAD 1

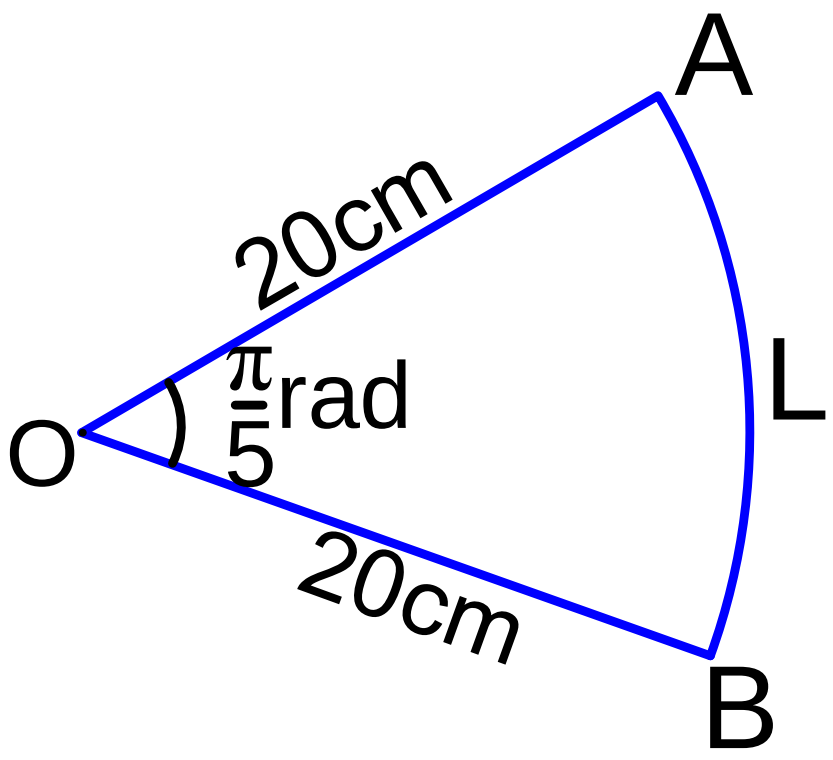


$$\frac{L_1}{L_2} = \frac{R_1}{R_2}$$

PROPIEDAD 2



1 Del gráfico, determine L.



Resoluciòn:

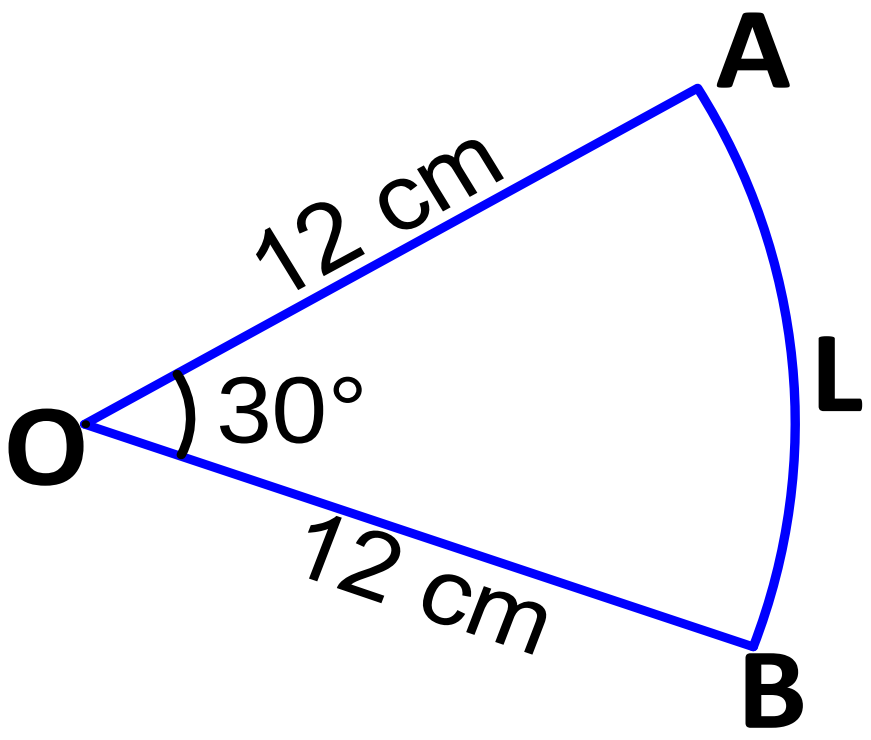
Recordando:

$$L = \theta \times R$$

$$L = \left(\frac{\pi}{5}\right)(20)$$

$$\therefore \quad L = 4\pi \text{ cm}$$

2 De gráfico, determine L.



Resoluciòn:

Recordando:

$L = \theta \times R$

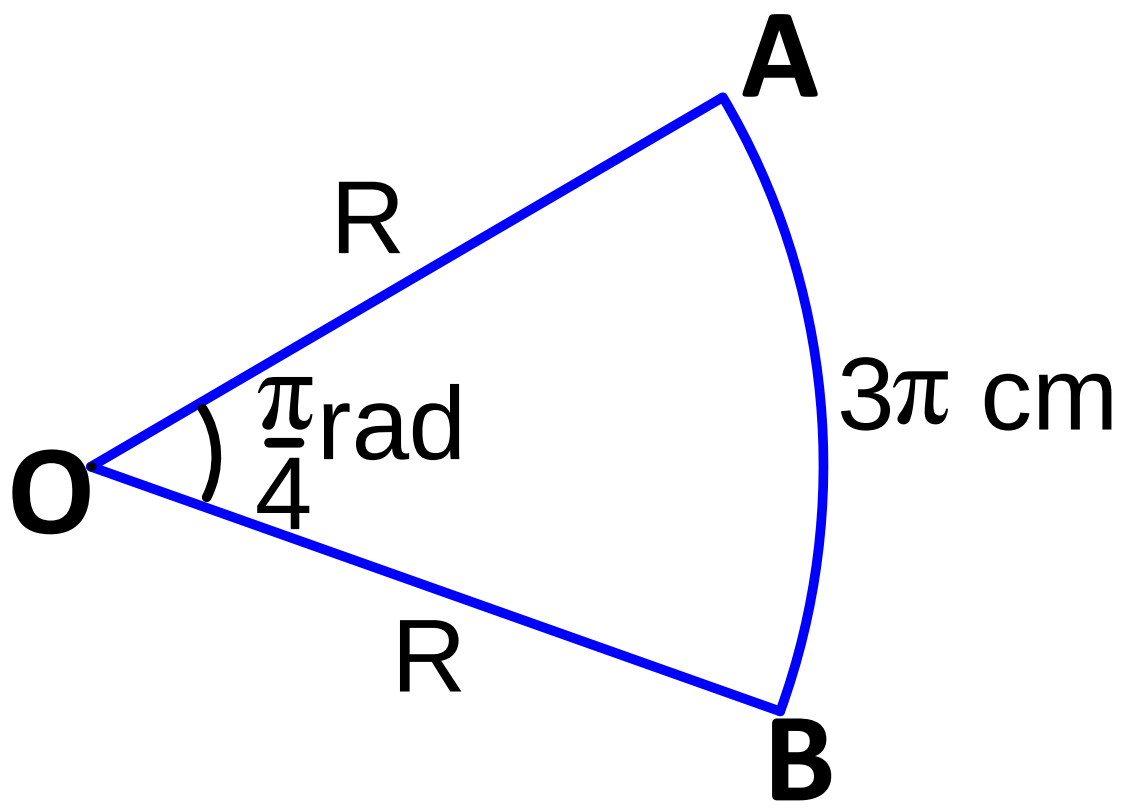
θ : debe estar en radianes

$30° = \left(\frac{\pi}{6}\right) rad$

$$L = \left(\frac{\pi}{\cancel{6}_{1}}\right)\left(\cancel{12}^{2}\right)$$

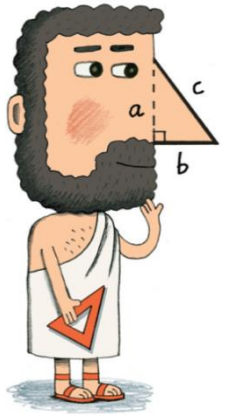
$$\therefore L = 2\pi \text{ cm}$$

3 Del gráfico, determine R.



Resoluciòn:

Recordando

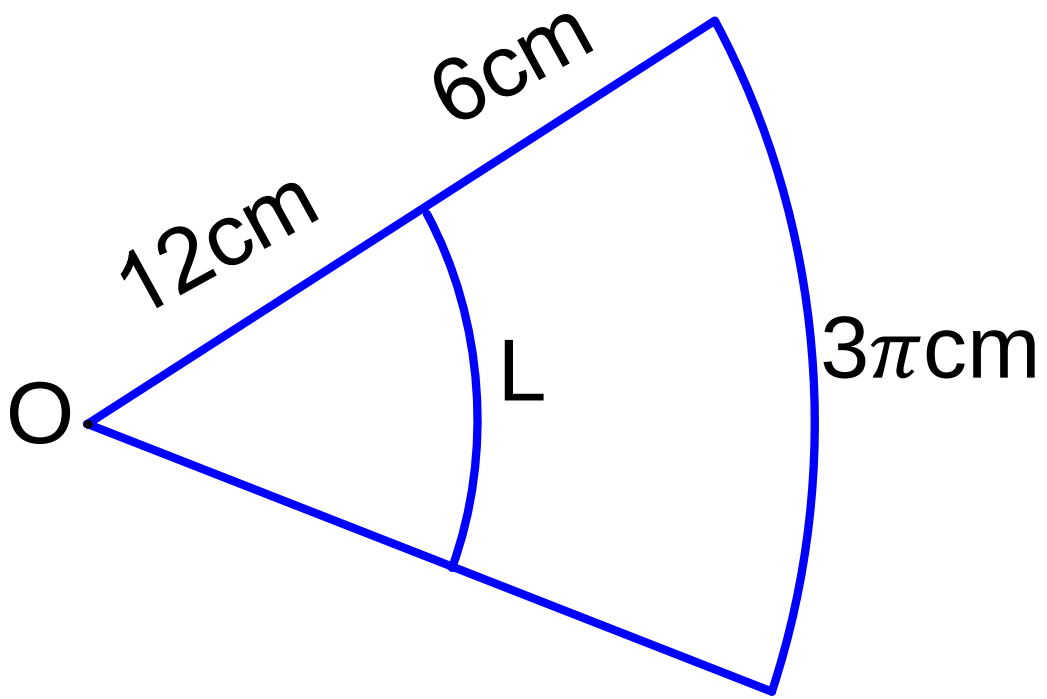


$L = \theta \times R$

$3\pi = \left(\frac{\pi}{4}\right)(R)$

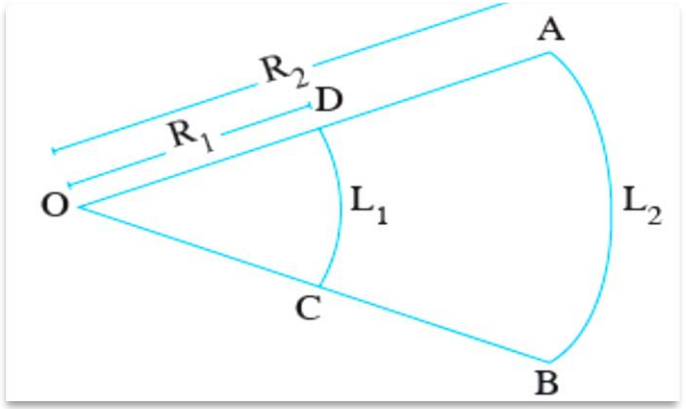
$\therefore R = 12\,cm$

4 Del gráfico, determine L.



Resoluciòn:

RECUERDA



$$\frac{L_1}{L_2} = \frac{R_1}{R_2}$$

$$\frac{L}{3\pi} = \frac{12}{18} \quad (2,\ 3)$$

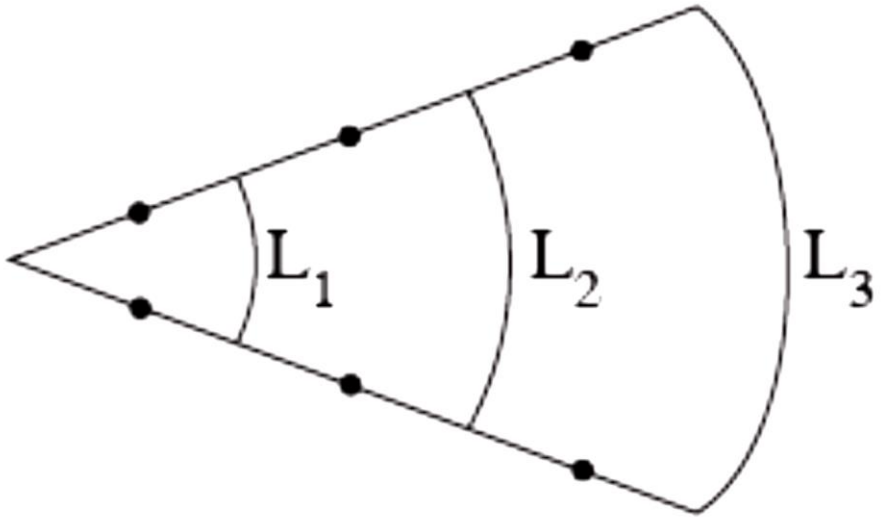
$$3L = 6\pi cm$$

$$L = \frac{6\pi cm}{3} \quad (2,\ 1)$$

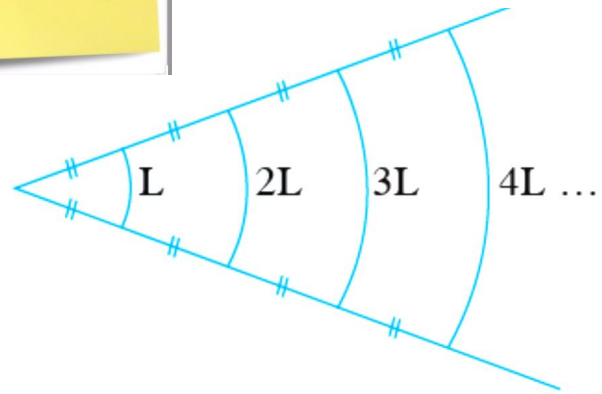
$$\therefore L = 2\pi\ cm$$

5 Del gráfico, reduzca

$$E = \frac{2L_3 + L_2}{L_1}$$



Resoluciòn:



$$L_1 = L$$
$$L_2 = 2L$$
$$L_3 = 3L$$

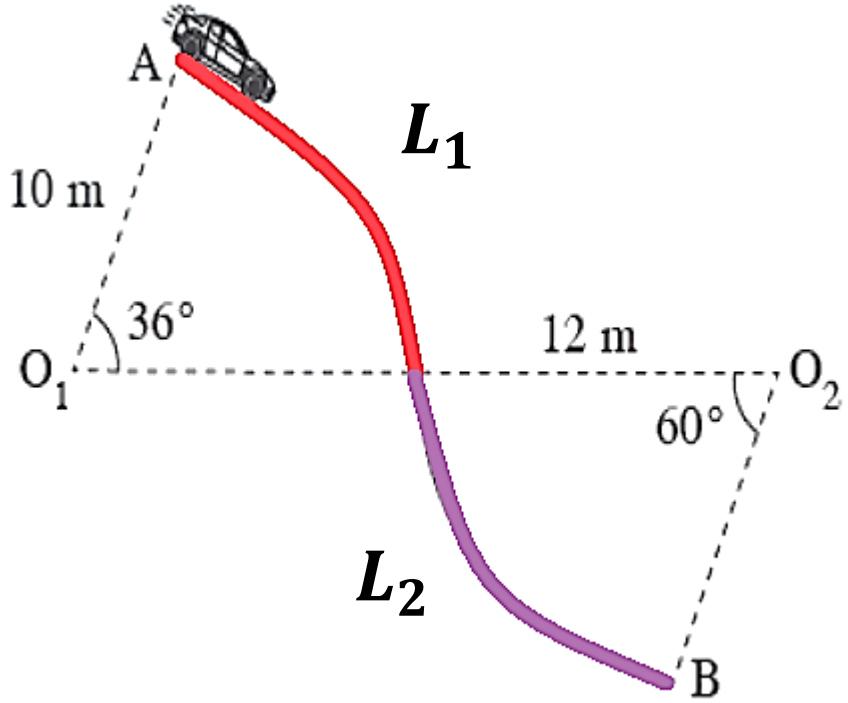
Reemplazando

$$E = \frac{2(3L) + (2L)}{(L)}$$

$$E = \frac{8\cancel{L}}{\cancel{L}}$$

$$\therefore E = 8$$

6 En la gráfica se muestra un auto desplazándose del punto A al punto B. Calcule la longitud de la trayectoria recorrida por dicho auto.



Resoluciòn:

¡Recuerda!

$$L = \theta \times R$$

θ : debe estar en radianes

$$60° = \left(\frac{\pi}{3}\right) rad$$

$$36° = \left(\frac{\pi}{5}\right) rad$$

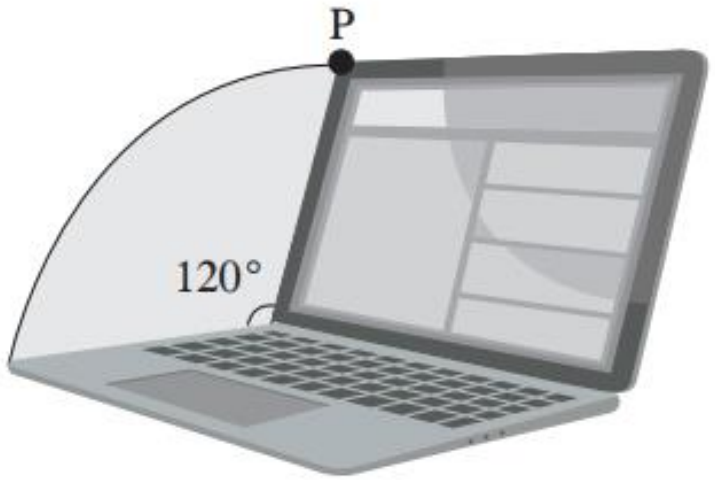
$$e = L_1 + L_2$$

$$e = \left(\frac{\pi}{\cancel{5}_{1}}\right)(\cancel{10}^{2}) + \left(\frac{\pi}{\cancel{3}_{1}}\right)(\cancel{12}^{4})$$

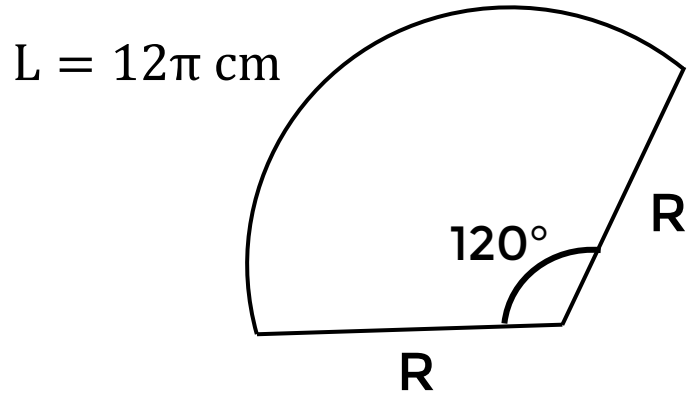
$$e = 2\pi + 4\pi$$

$$\therefore e = 6\pi\ m$$

7 Al abrirse una laptop, el punto P del borde superior de la pantalla barre un ángulo de 120°. Determine la longitud del ancho de la pantalla, en centímetros, si al momento del barrido se formó un arco de medida igual a 12π cm.



Resolución:



¡Recuerda! $L = \theta \times R$

$$120° = \frac{2\pi}{3}\text{rad}$$

Reemplazamos:

$$\cancel{12}^{6}\pi = \frac{\cancel{2}^{1}\pi}{3} \times R \Rightarrow R = 18$$

$\therefore$ **R = 18 cm**