

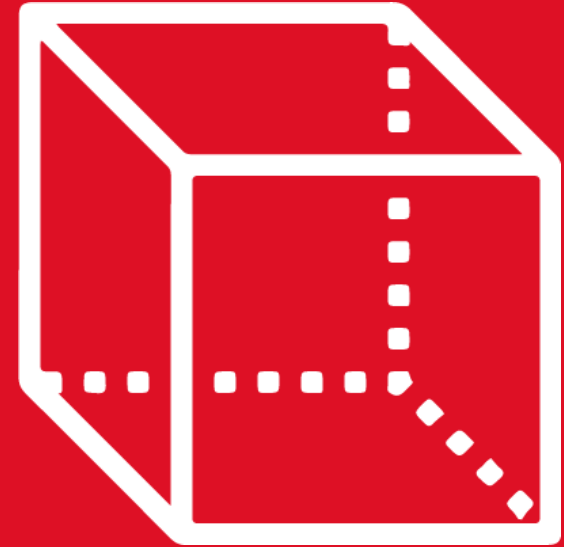


GEOMETRÍA

2do

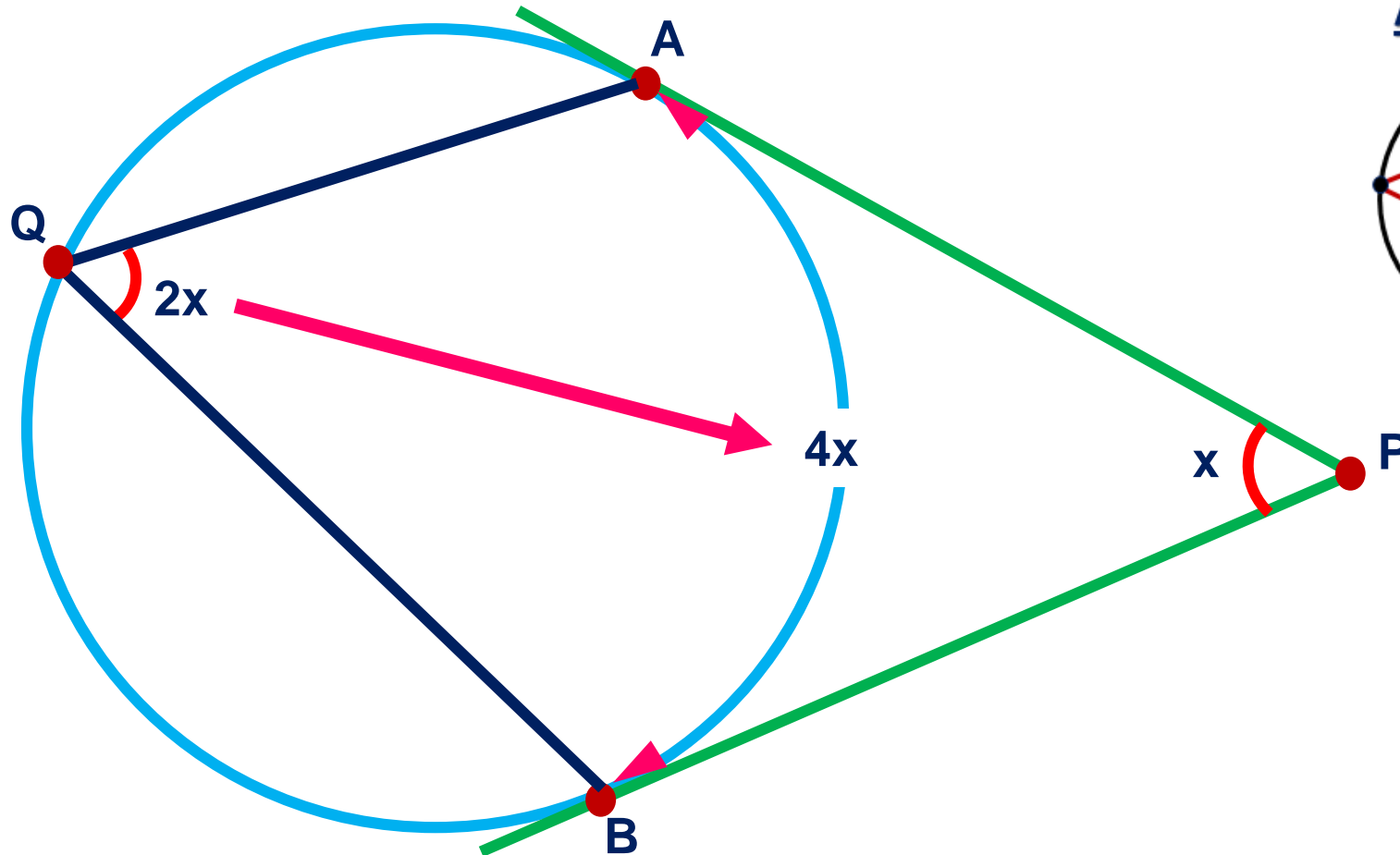
SECONDARY

ASESORÍA

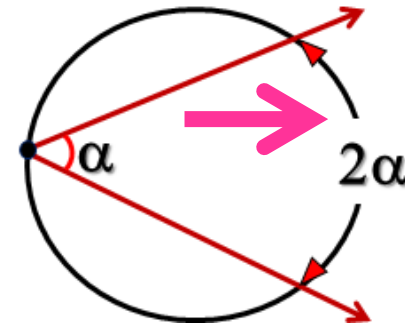


 **SACO OLIVEROS**

1. Desde un punto P exterior a la circunferencia, se trazan los segmentos tangentes \overline{PA} y \overline{PB} , luego en el arco mayor se ubica un punto Q, de modo que $m\angle AQB = 2 m\angle APB$. Halle la $m\angle APB$.



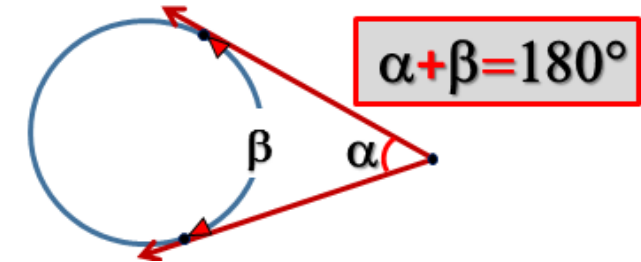
Ángulo inscrito



$$m\widehat{AB} = 4x$$

TEOREMA

A

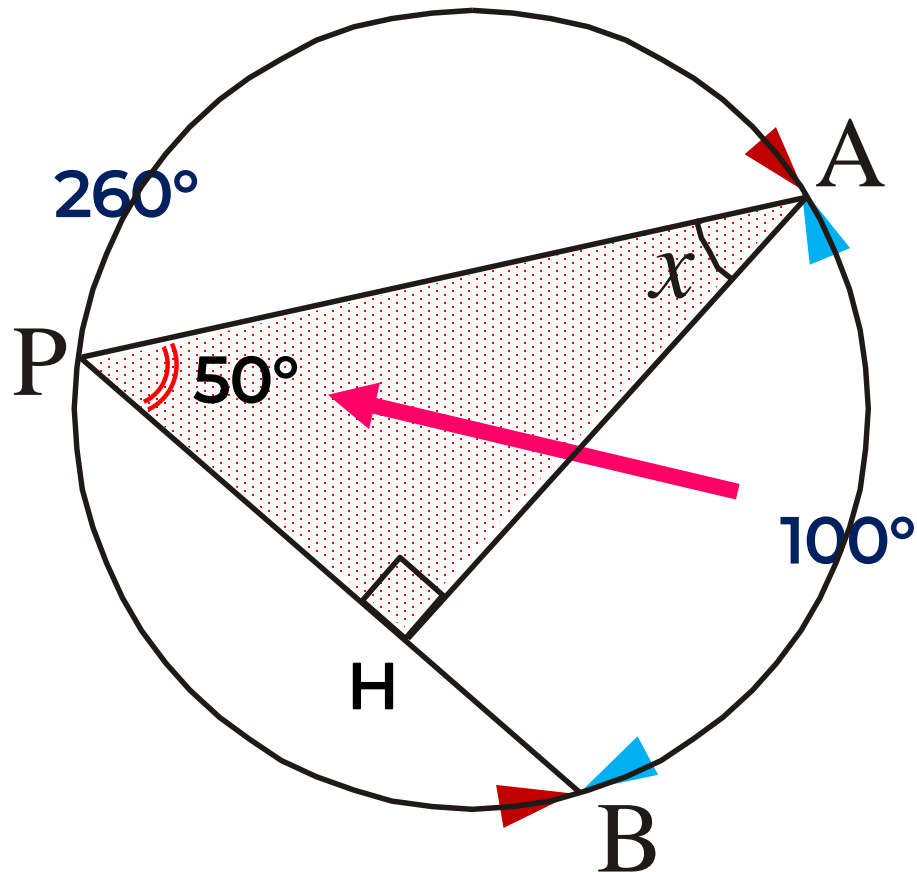


$$\begin{aligned} 4x + x &= 180^\circ \\ 5x &= 180^\circ \end{aligned}$$

$$m\angle APB = x = 36^\circ$$

2. En el gráfico, la $m \widehat{APB} = 260^\circ$. Halle el valor de x

Nos piden: x



En la circunferencia

$$260^\circ + m\widehat{AB} = 360^\circ$$

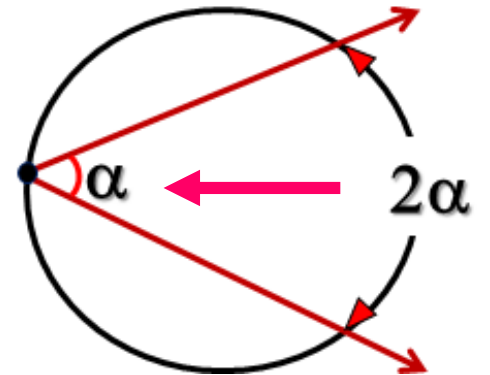
$$m\widehat{AB} = 100^\circ$$

• En el $\triangle PHA$

$$50^\circ + x = 90^\circ$$

$$x = 40^\circ$$

Ángulo inscrito

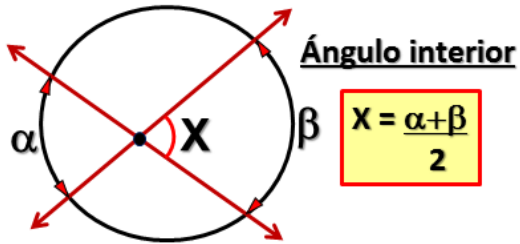


$$m \angle APB = 50^\circ$$



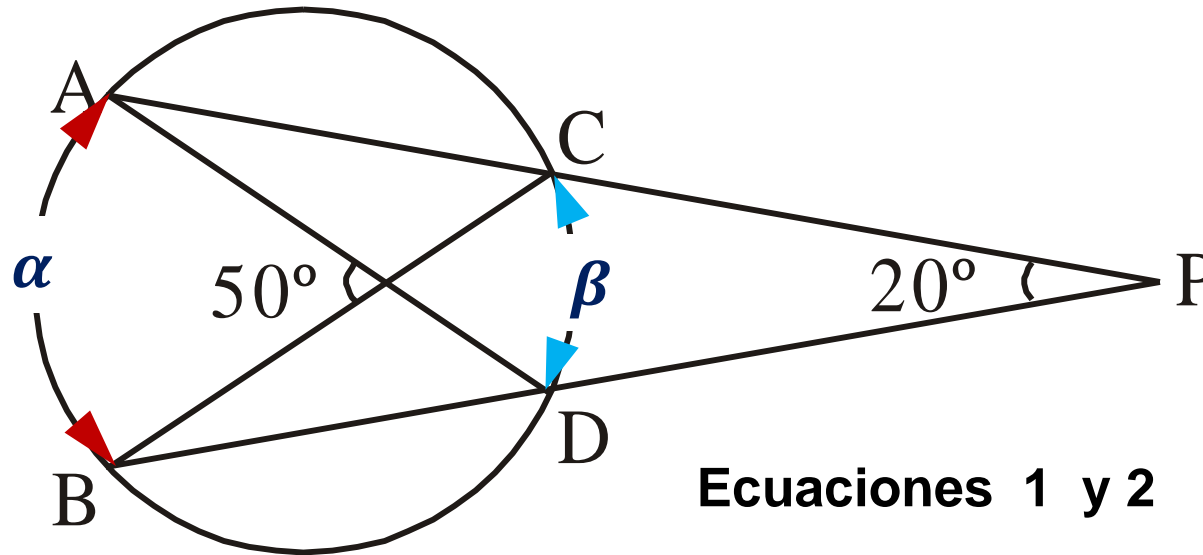
3. En el gráfico, halle el valor de $m\widehat{AB}$

Nos piden: $m\widehat{AB}$



$$50^\circ = \frac{\alpha + \beta}{2}$$

$$100^\circ = \alpha + \beta \dots (1)$$



Ecuaciones 1 y 2

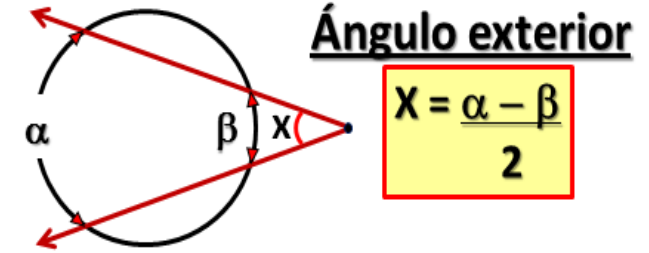
$$100^\circ = \alpha + \beta$$

$$40^\circ = \alpha - \beta$$

(+)

$$140^\circ = 2\alpha$$

$$70^\circ = \alpha$$



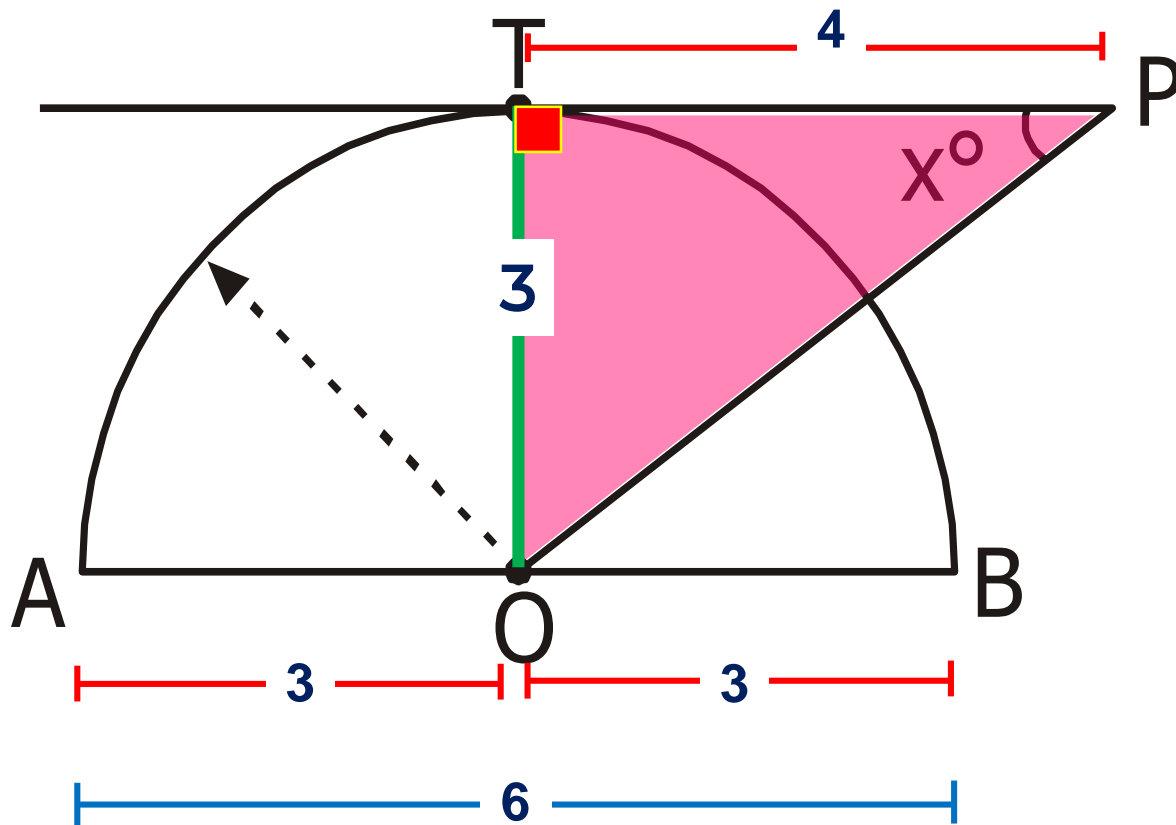
$$20^\circ = \frac{\alpha - \beta}{2}$$

$$40^\circ = \alpha - \beta \dots (2)$$

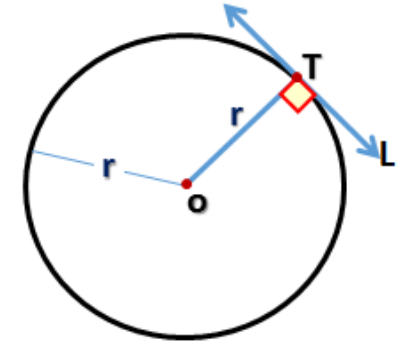
$$\alpha = m\widehat{AB} = 70^\circ$$

4. En el gráfico, si: $PT = 4$ u y $AB = 6$ u. (T: punto de tangencia). Halle el valor de x

Nos piden: x



• Se traza \overline{OT} (Radio)



• \overline{AB} es diámetro ($AB = 6$)

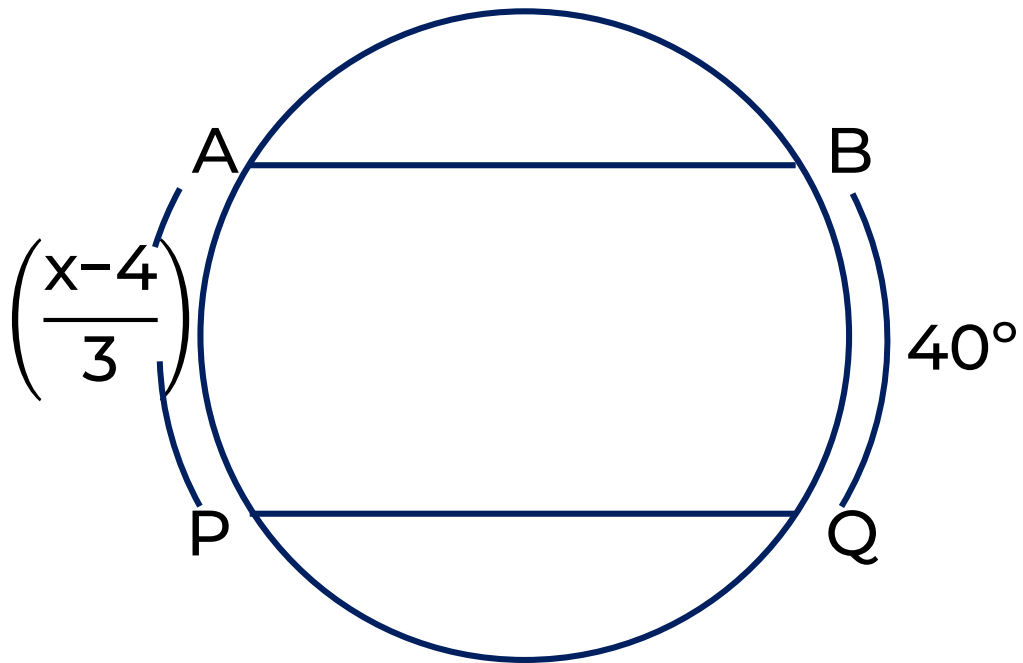
➔ $AO = OB = OT = 3$ (Radio)

• En el $\triangle OTP$ (Notable $37^\circ - 53^\circ$)

$x = 37^\circ$

5. En el gráfico, si $\overline{AB} \parallel \overline{PQ}$, Hala el valor de x

Nos piden: x



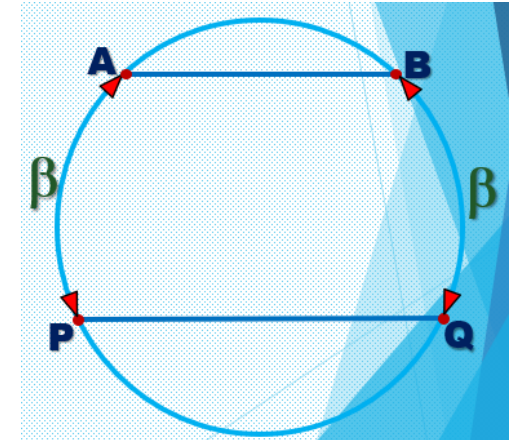
Si: $\overline{AB} \parallel \overline{PQ}$

→ $m \widehat{AP} = m \widehat{BQ}$

$$\frac{x - 4^\circ}{3} = 40^\circ$$

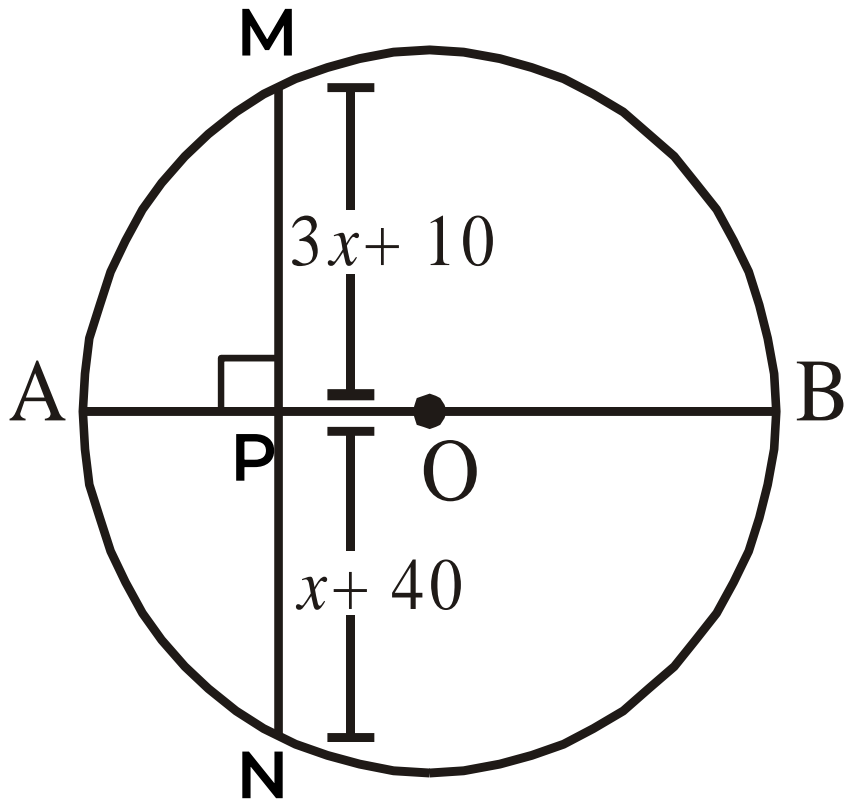
$$x - 4^\circ = 120^\circ$$

$x = 124^\circ$

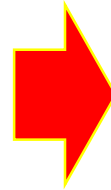


6. En el gráfico, si O es centro de la circunferencia. Halle el valor de x

Nos piden: x



Si $\overline{OA} \perp \overline{MN}$

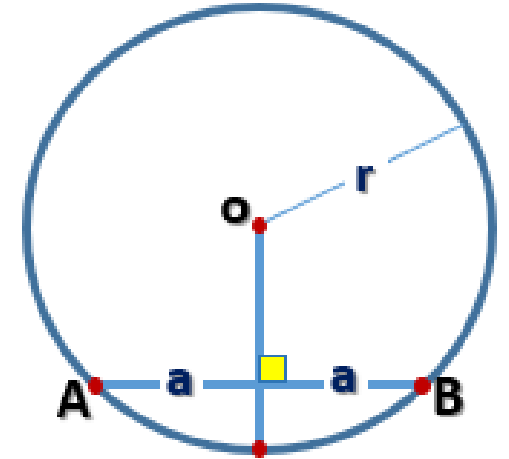


$$MP = NP$$

$$3x + 10 = x + 40$$

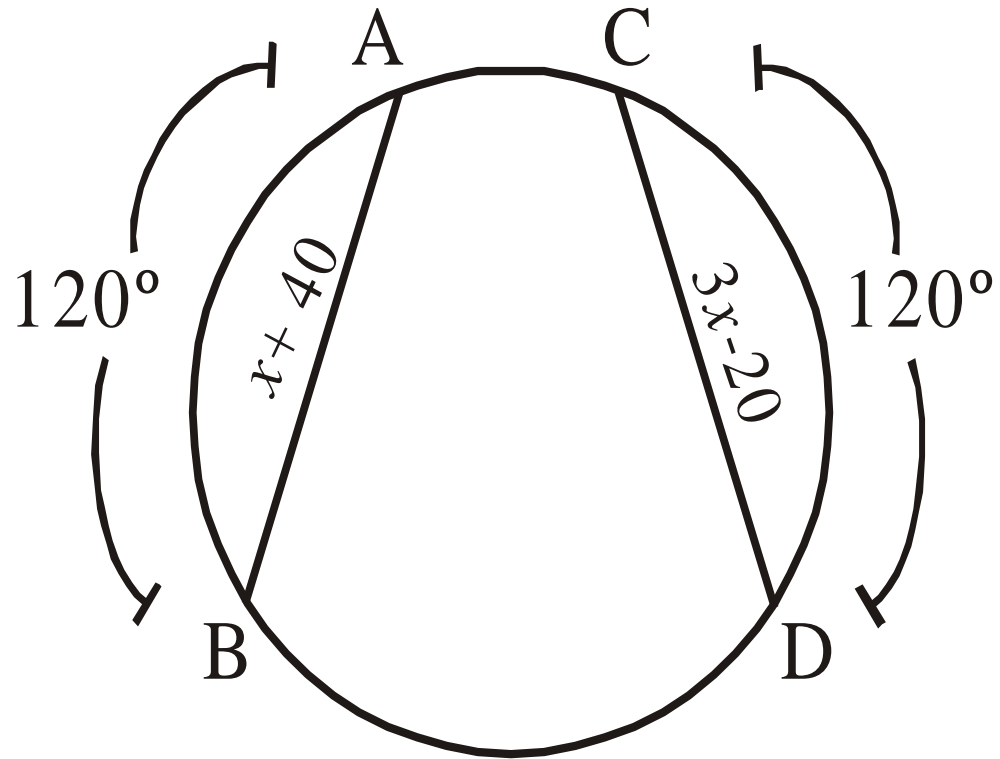
$$2x = 30$$

$$x = 15$$

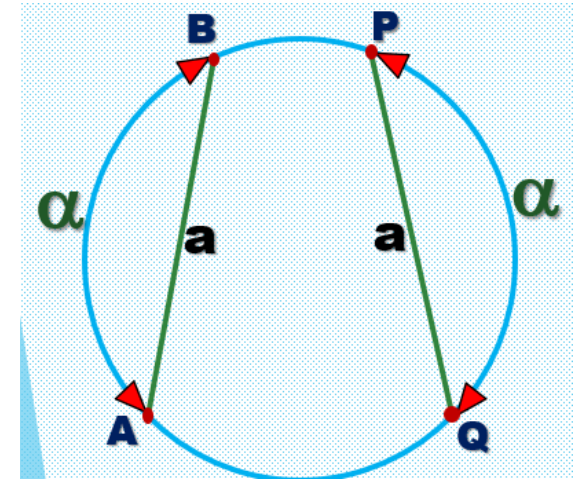


7. En el gráfico, halle el valor de x.

Nos piden: x



Si: $m \widehat{AB} = m \widehat{CD}$



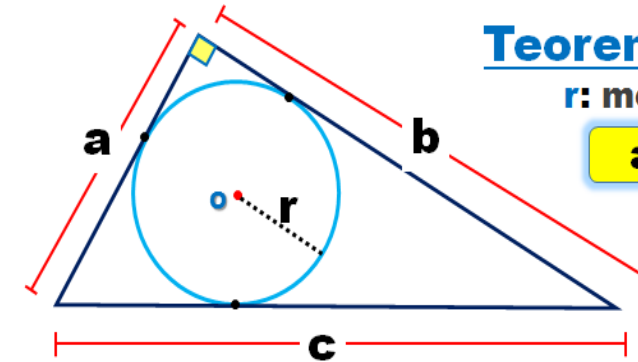
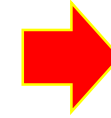
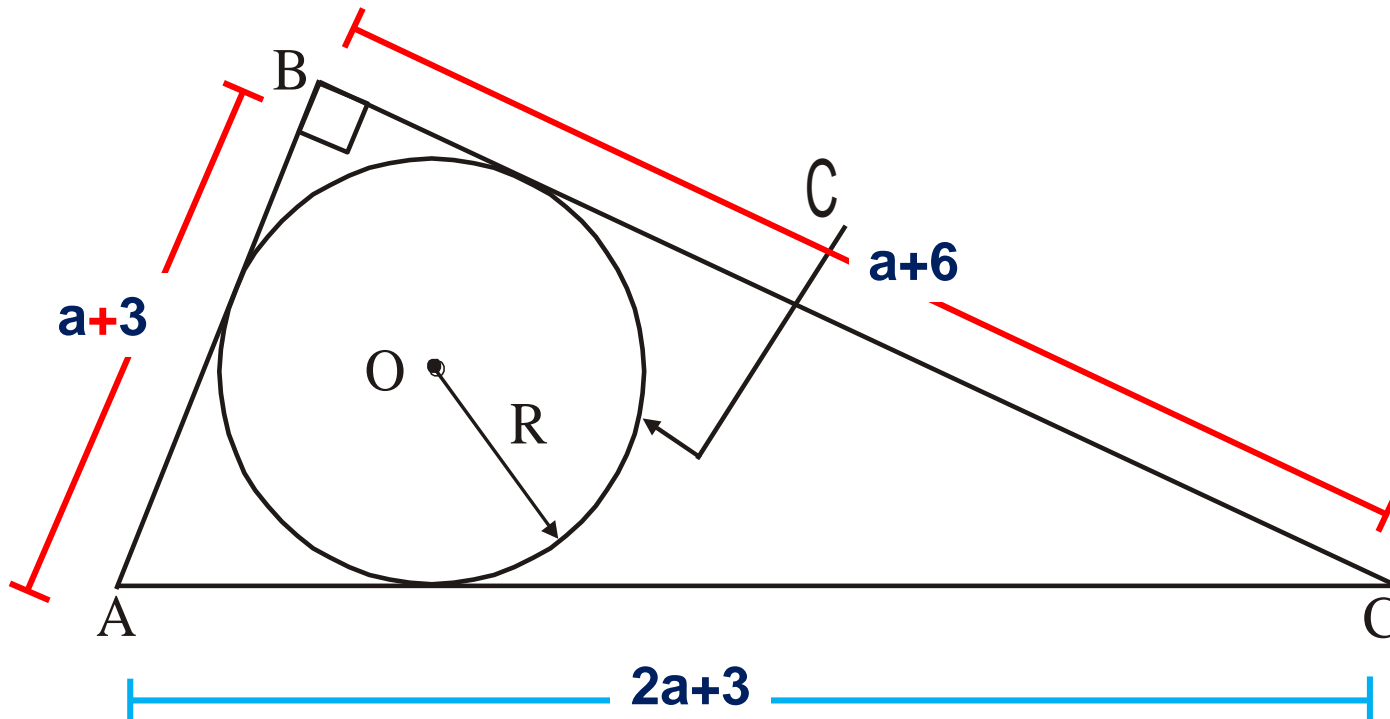
$$\begin{aligned} AB &= CD \\ x + 40 &= 3x - 20 \\ 60 &= 2x \end{aligned}$$

$$x = 30$$

8. En la figura, C es una circunferencia inscrita en el triángulo rectángulo ABC, $AB = a + 3$, $BC = a + 6$, $AC = 2a + 3$. Calcule R.

Nos piden

R = Longitud del inradio



Teorema de Poncelet

r : medida del inradio

$$a + b = c + 2r$$

$$\cancel{a} + 3 + \cancel{a} + 6 = \cancel{2a} + 3 + 2R$$

$$9 = 3 + 2R$$

$$6 = 2R$$

$$\boxed{R = 3}$$

9. En un triángulo ABC recto en B, su perímetro es igual a 18 m, si su hipotenusa mide 8m. Halle la longitud de la longitud del inradio.

Nos piden: inradio

Perímetro del triángulo

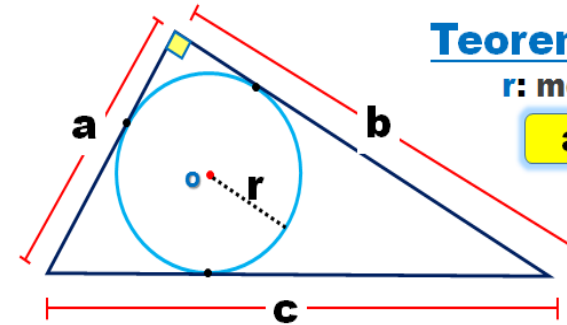
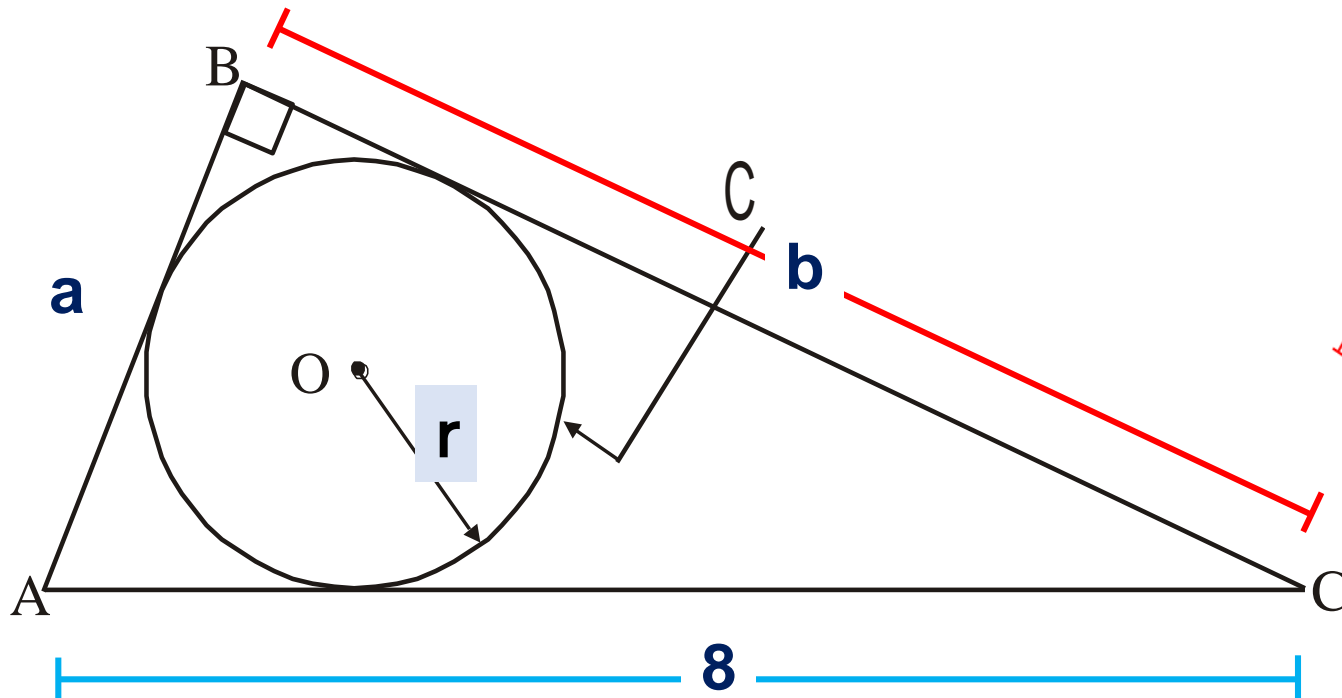
$$2p \triangle = a + 8 + b = 18$$

$$a + b = 10$$

Teorema de Poncelet

r: medida del inradio

$$a + b = c + 2r$$



$$a + b = 8 + 2r$$

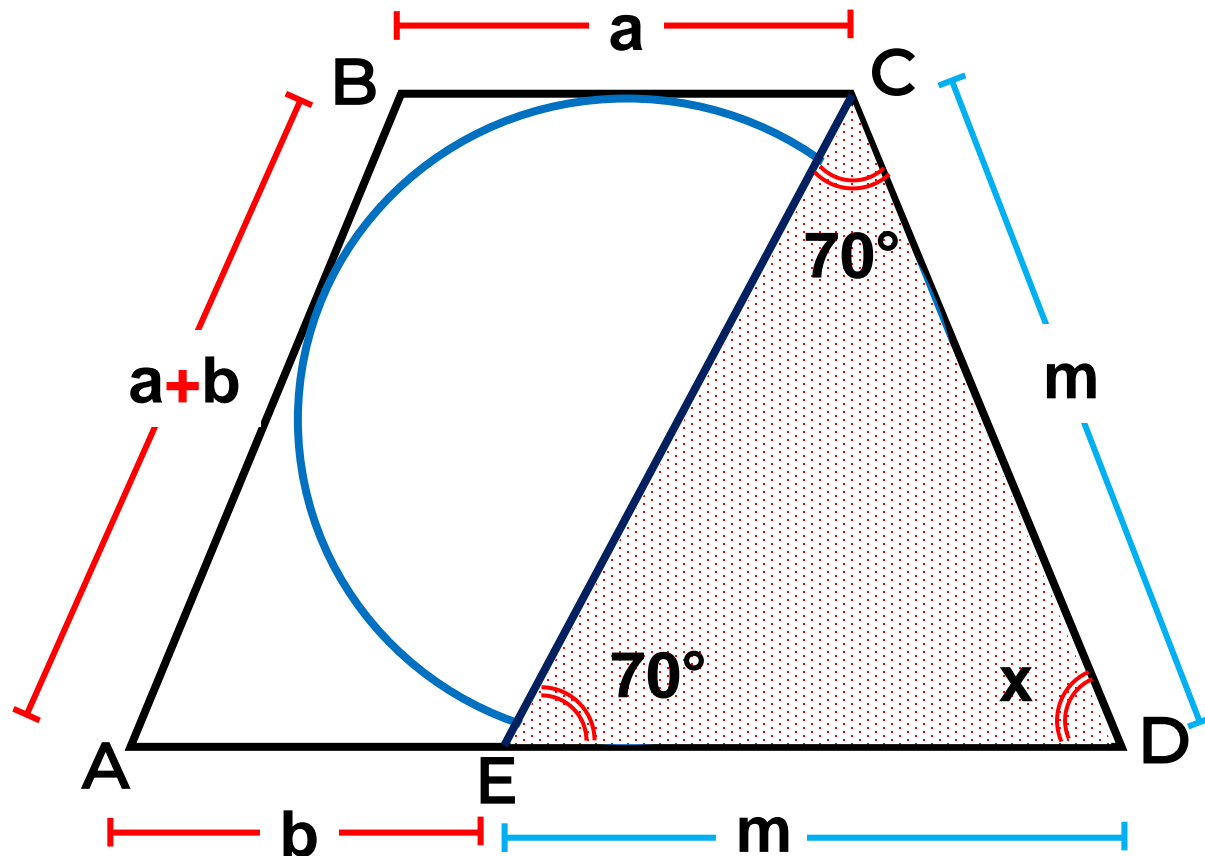
$$10 = 8 + 2r$$

$$2 = 2r$$

$$r = 1 \text{ m}$$

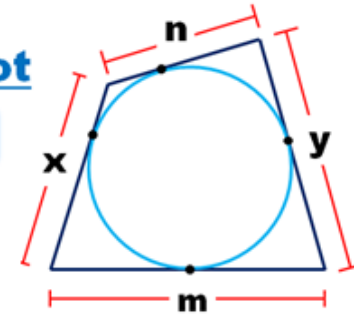
10. En la figura se muestra una circunferencia inscrita, si $AB = BC + AE$. Halle el valor de x

Nos piden: x



Teorema de Pitot

$$x + y = m + n$$



$$\cancel{a} + \cancel{b} + n = \cancel{a} + \cancel{b} + m$$

$$n = m$$

El $\triangle ECD$ (Isósceles)

$$70^\circ + x + 70^\circ = 180^\circ$$

$$x + 140^\circ = 180^\circ$$

$$x = 40^\circ$$