



GEOMETRÍA

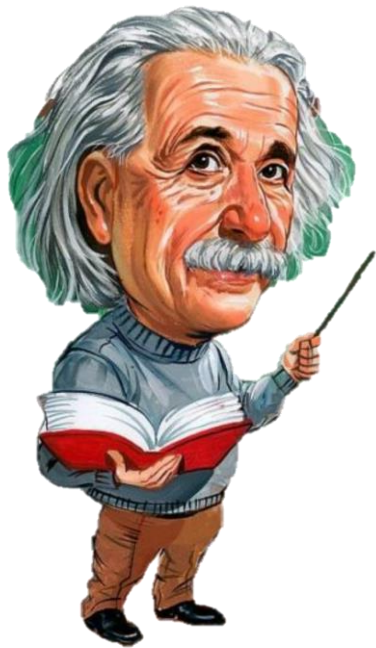
Capítulo 13

1st
SECONDARY

Trapecio



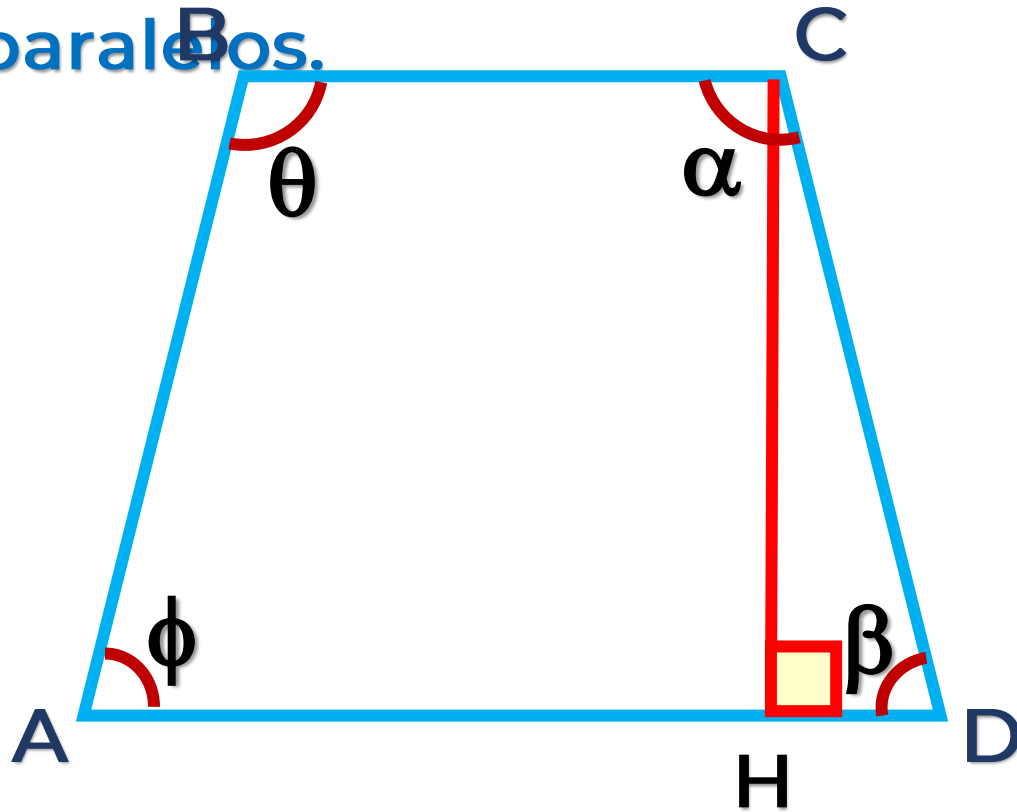
 **SACO OLIVEROS**



TRAPECIO

Definición: Es el cuadrilátero que tiene solo un par de lados paralelos.

$$\overline{BC} \parallel \overline{AD}$$



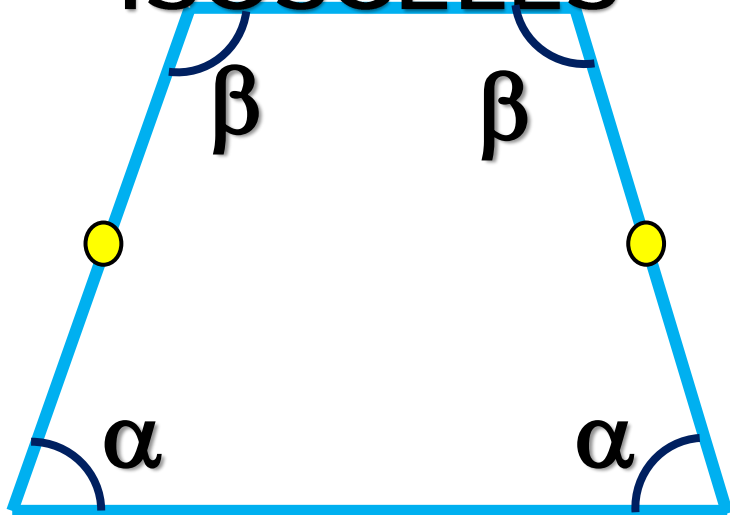
- **Bases:** Son los lados paralelos del trapecio (BC y AD)
- **Lados laterales:** Son los lados no paralelos (AB y CD).
- **Altura:** Es el segmento perpendicular a las bases del trapecio (\overline{BH}).

$$\theta + \phi = 180^\circ$$

$$\alpha + \beta = 180^\circ$$

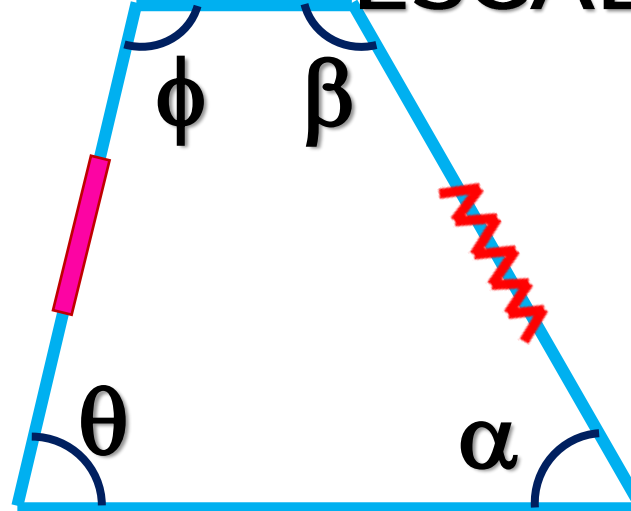


TRAPECIO ISÓSCELES

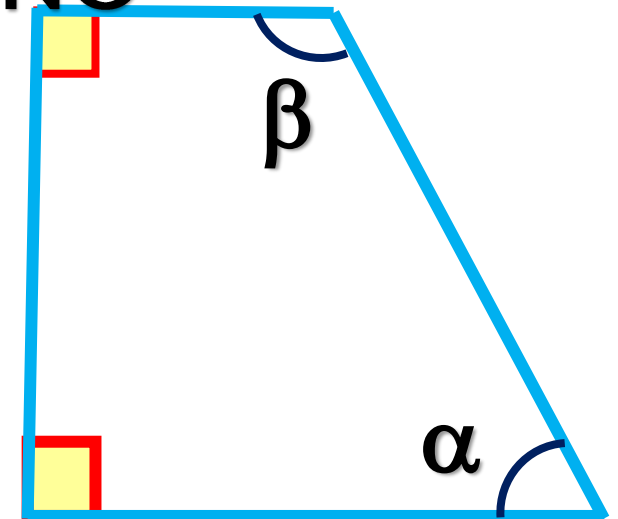


$$\alpha + \beta = 180^\circ$$

TRAPECIO ESCALENO



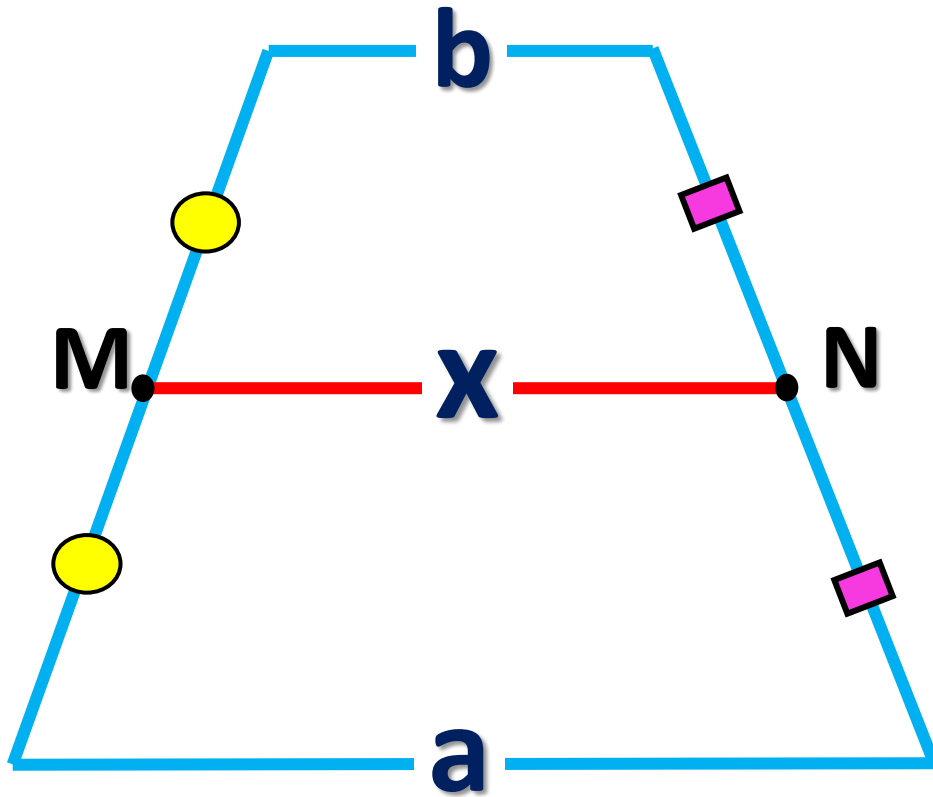
$$\theta + \phi = 180^\circ$$



T.

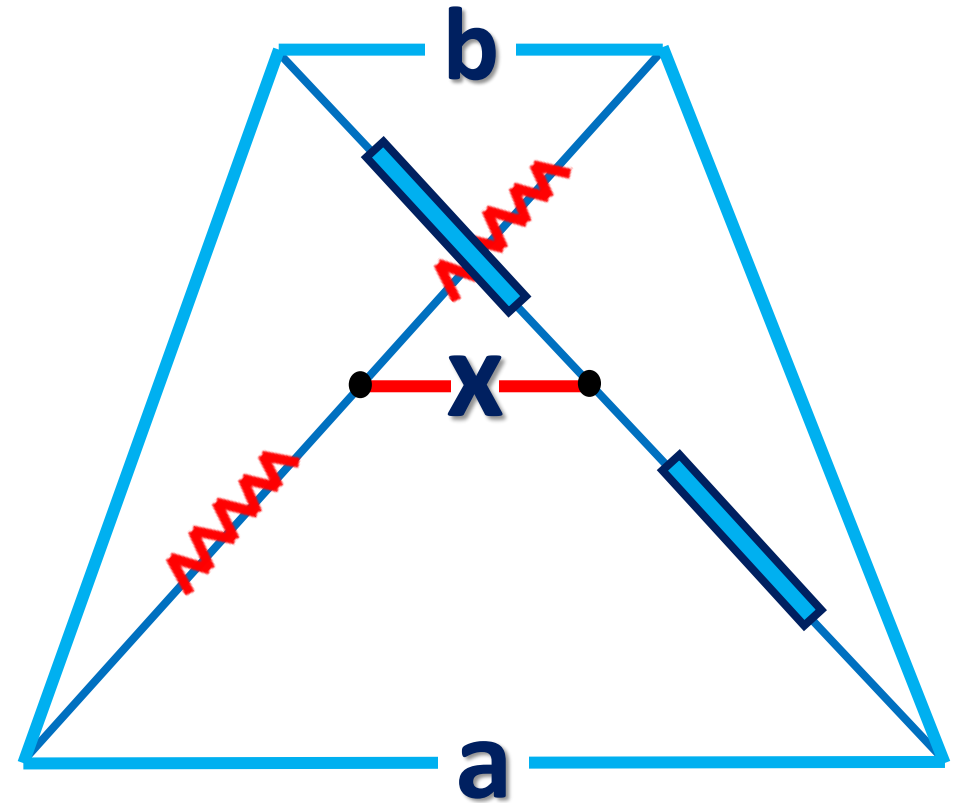
Rectángulo.

$$\alpha + \beta = 180^\circ$$



MN : Base
media

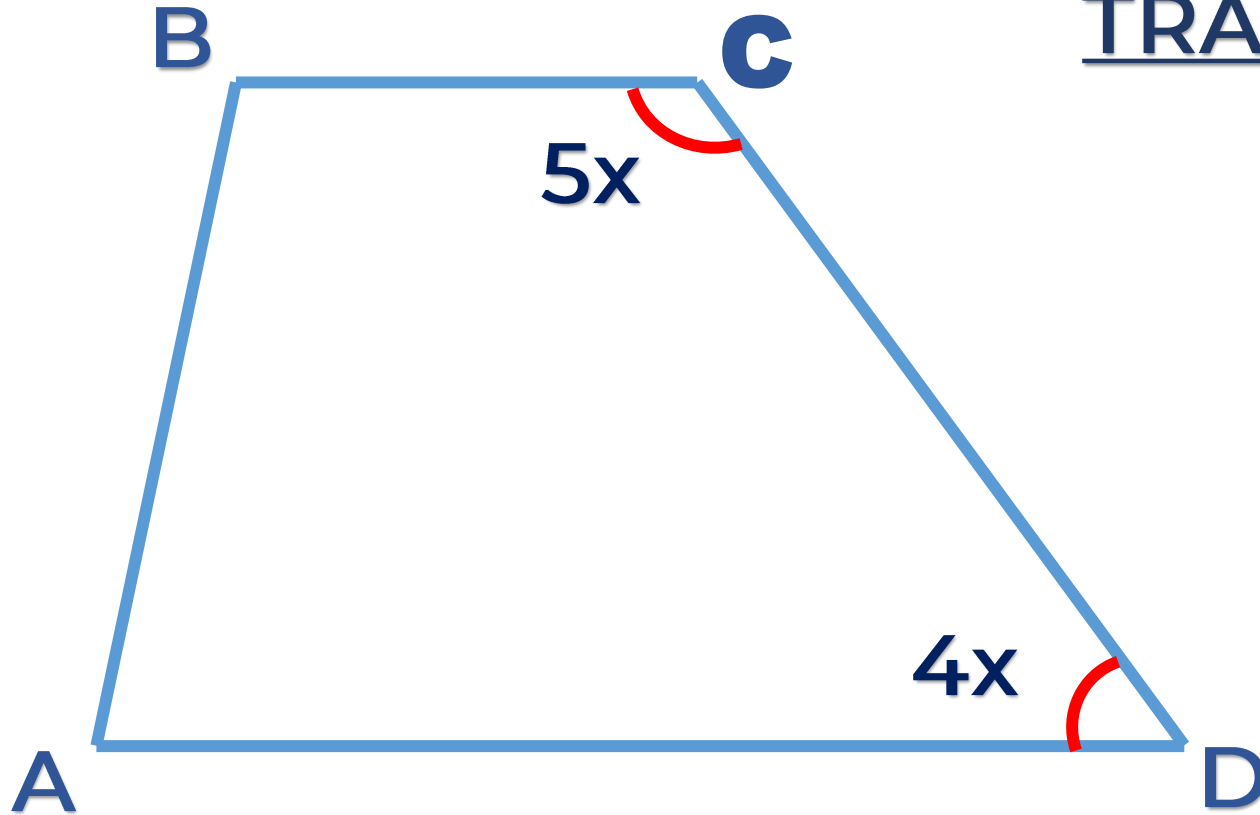
$$x = \frac{a+b}{2}$$



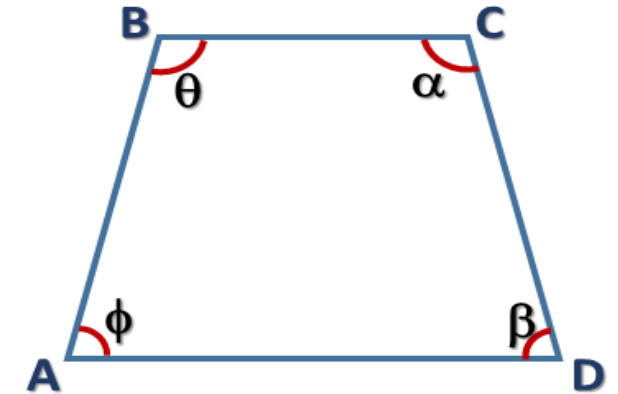
$$x = \frac{a-b}{2}$$



1. En el trapecio ABCD ($BC \parallel AD$), halle el valor de x .

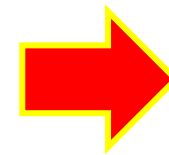


TRAPECIO



$$\theta + \phi = 180^\circ$$

$$\alpha + \beta = 180^\circ$$

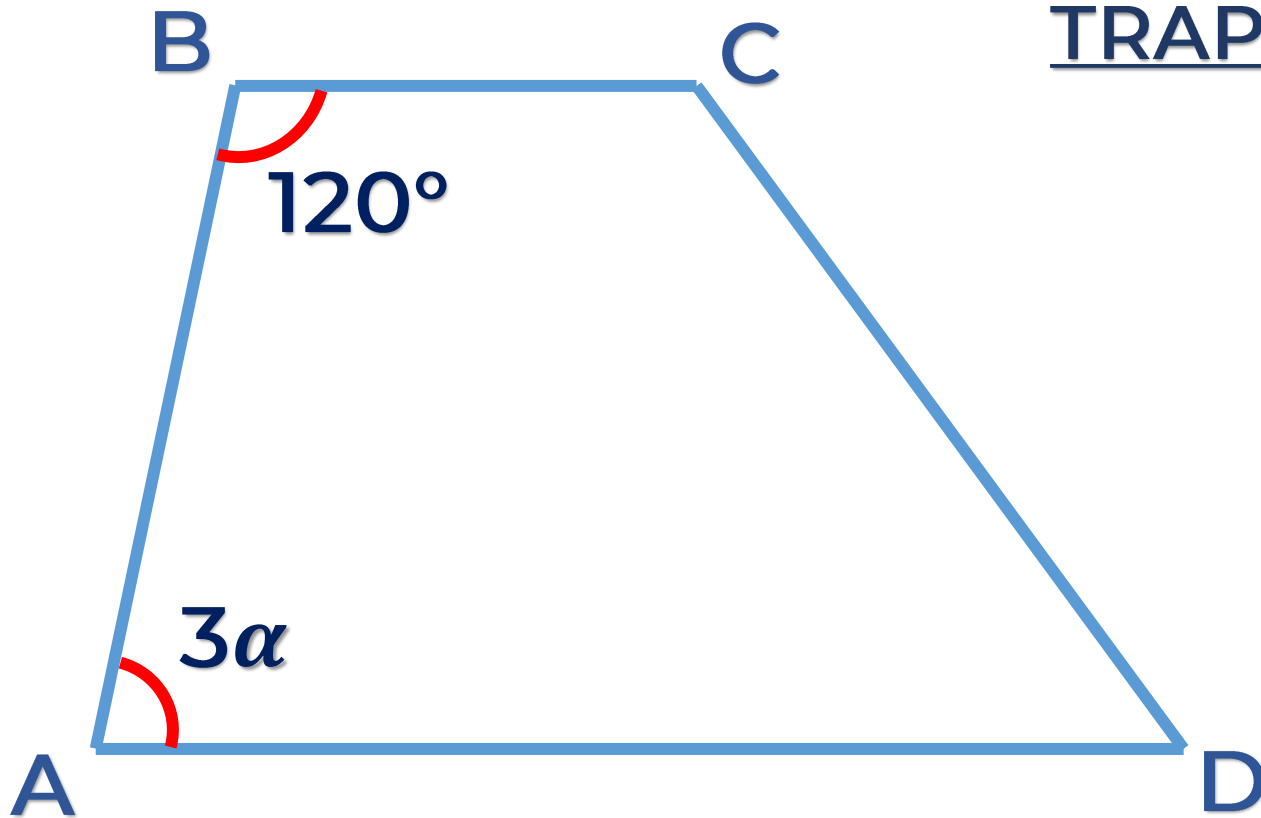


$$5x + 4x = 180^\circ$$

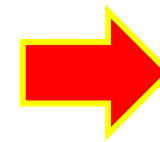
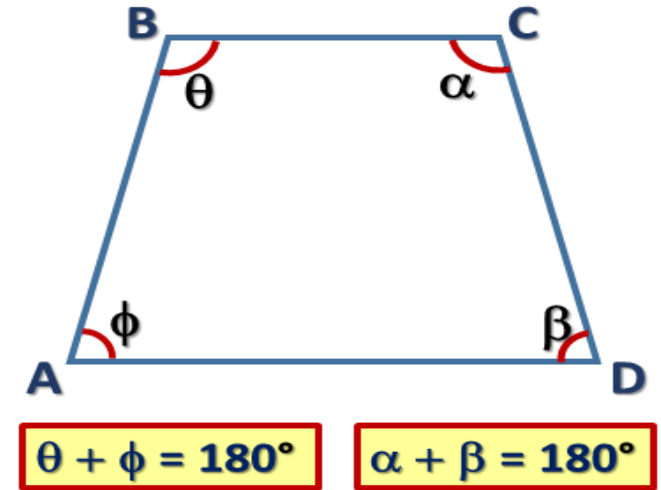
$$9x = 180^\circ$$

$$x = 20^\circ$$

2. En el trapecio ABCD ($\overline{BC} \parallel \overline{AD}$), Si la $m\angle ABC = 120^\circ$ y $m\angle BAD = 3\alpha$. Calcule el valor de α .



TRAPECIO



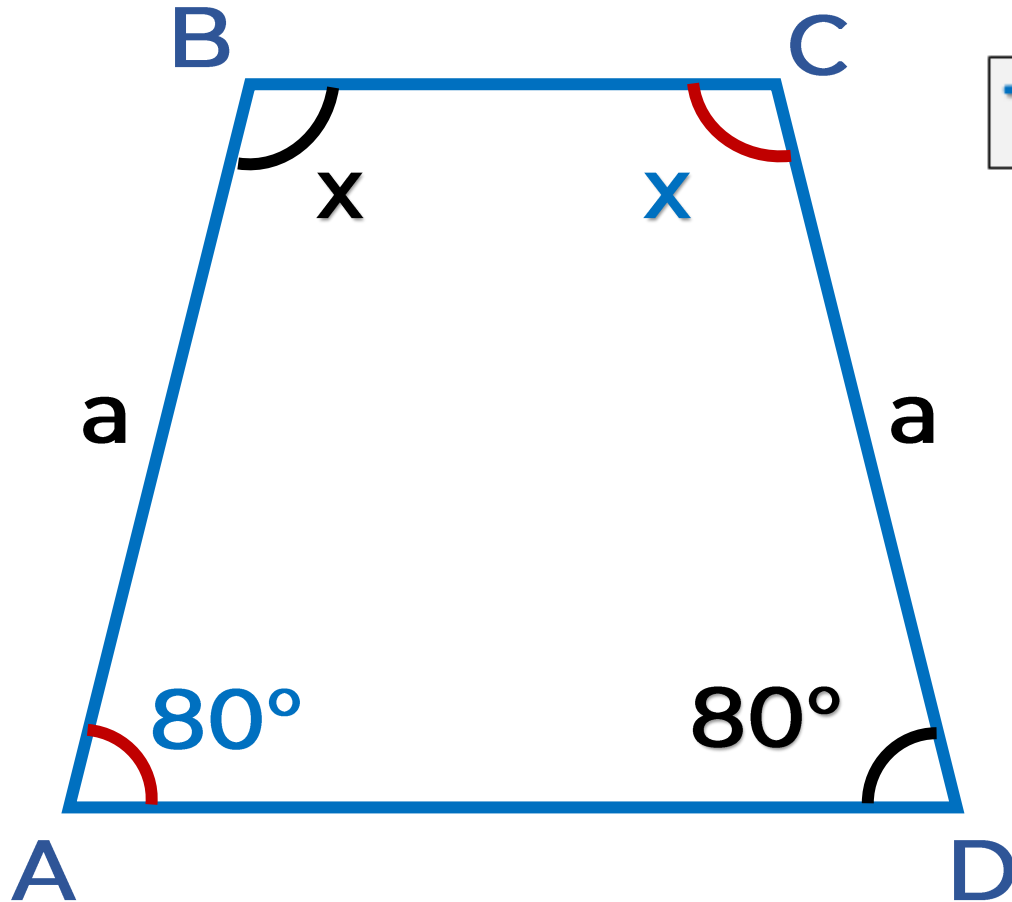
$$120^\circ + 3\alpha = 180^\circ$$

$$3\alpha = 60^\circ$$

$$\alpha = 20^\circ$$

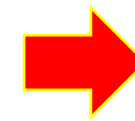
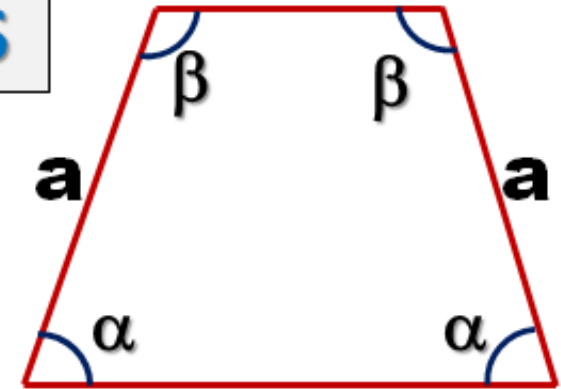


3. En un trapecio isósceles ABCD, $AB = CD$. Sabiendo que $m\angle BAD = 80^\circ$, halle $m\angle BCD$.



TRAPECIO ISÓSCELES

$$\alpha + \beta = 180^\circ$$

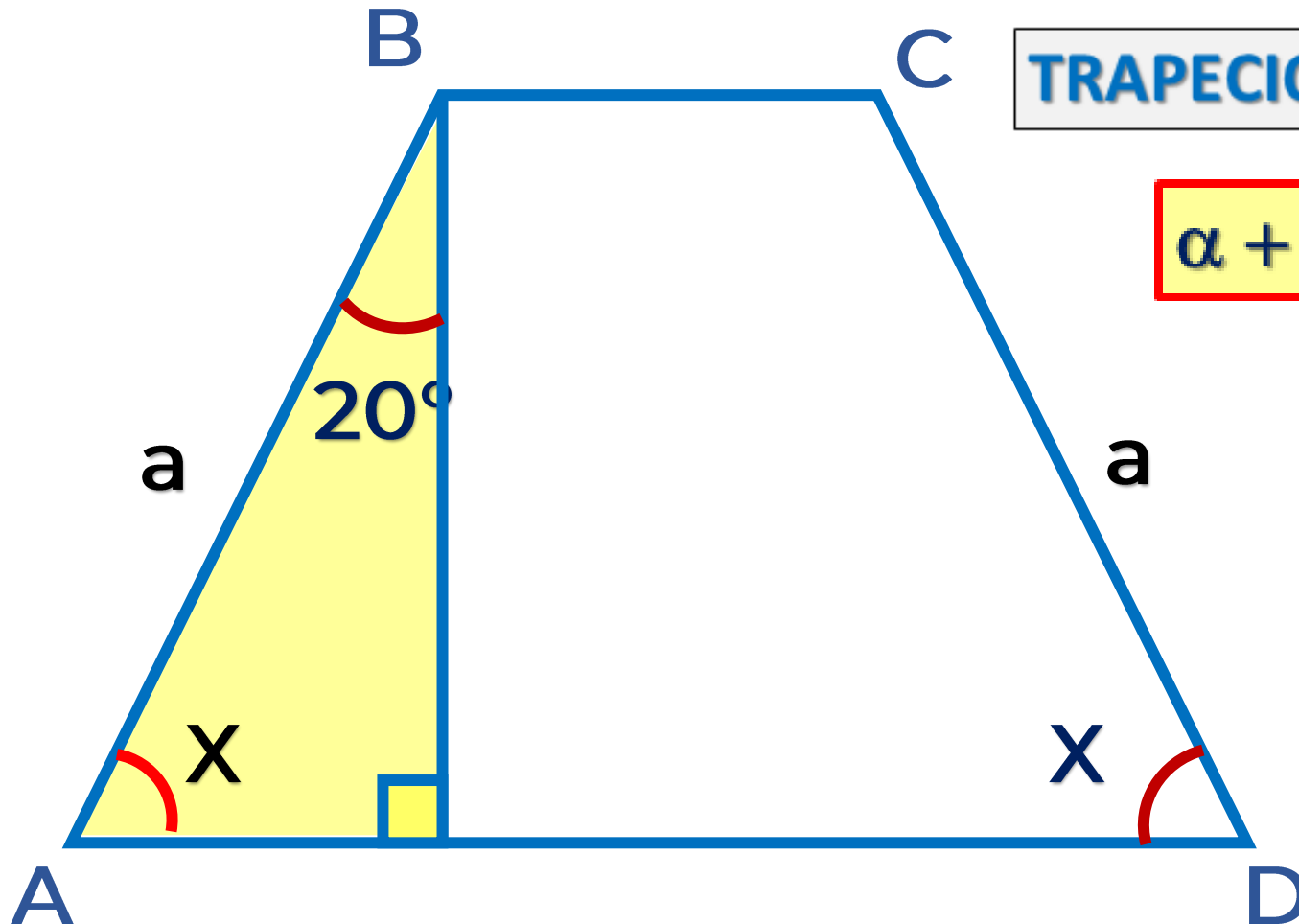


$$x + 80^\circ = 180^\circ$$

$$x = 100^\circ$$

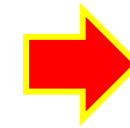
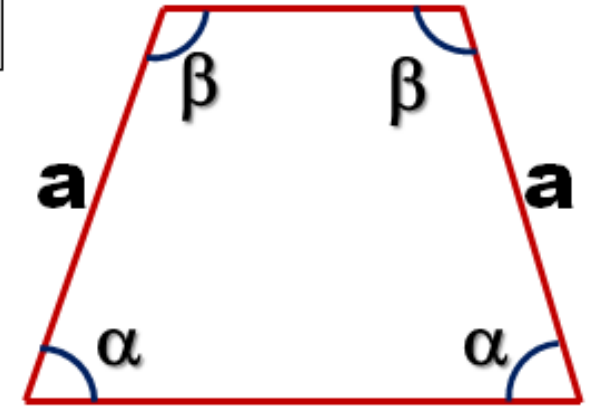


4. Si ABCD es un trapecio isósceles, halle el valor de x .



TRAPECIO ISÓSCELES

$$\alpha + \beta = 180^\circ$$



$$x + 20^\circ = 90^\circ$$

$$x = 70^\circ$$



5. En el trapezio ABCD isósceles ($\overline{AD} \parallel \overline{BC}$), halle PD.

- Cuadriláteros ABCD (TRAPECIO ISÓSCELES)

$\Rightarrow CD = AB = 8$

- $\overline{AD} \parallel \overline{BC}$ (Áng Altero Internos)

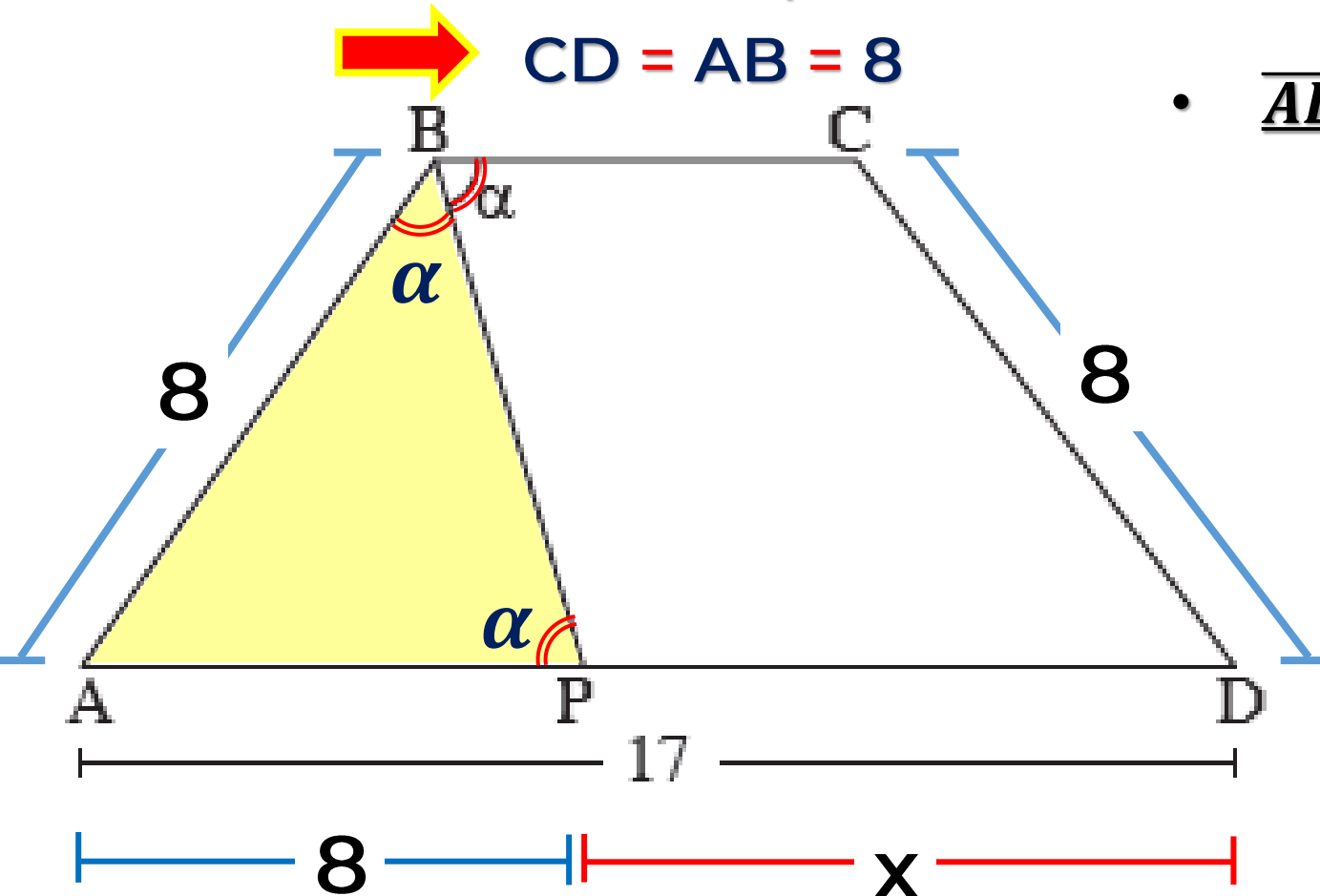
- $\triangle BAP$ (ISÓSCELES)

$\Rightarrow AP = AB = 8$

- EN AD $AD = AP + PD$

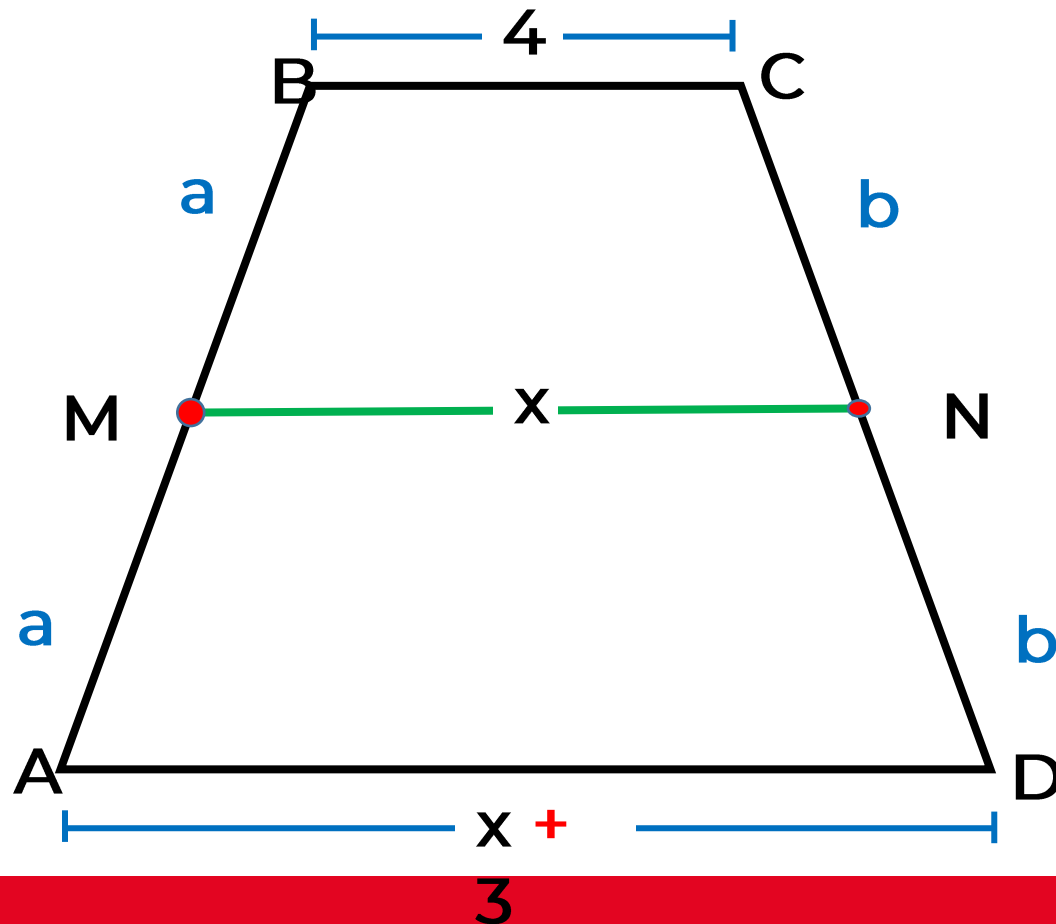
$$17 = 8 + x$$

$$x = PD = 9$$

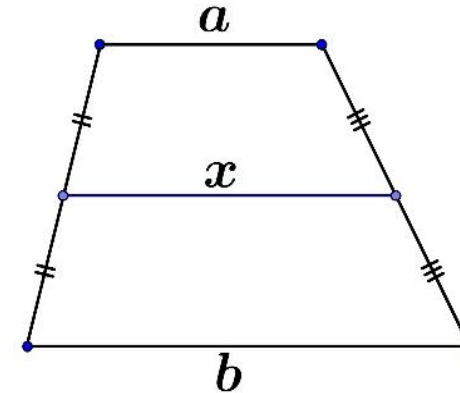




6. En un trapezio ABCD ($\overline{AD} \parallel \overline{BC}$), $BC < AD$, M y N son puntos medios de \overline{AB} y \overline{CD} , respectivamente. Si $MN = x$, $AD = x + 3$ y $BC = 4$ m, halle el valor de x .



Base media de un trapezio



$$x = \frac{a + b}{2}$$

$$x = \frac{x + 3 + 4}{2}$$

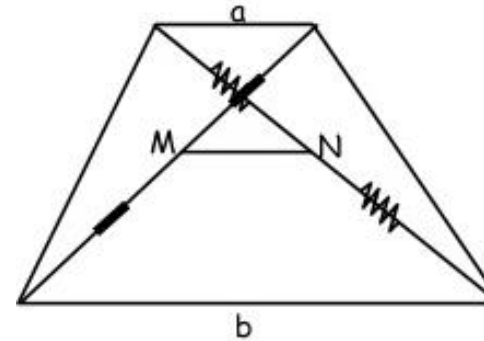
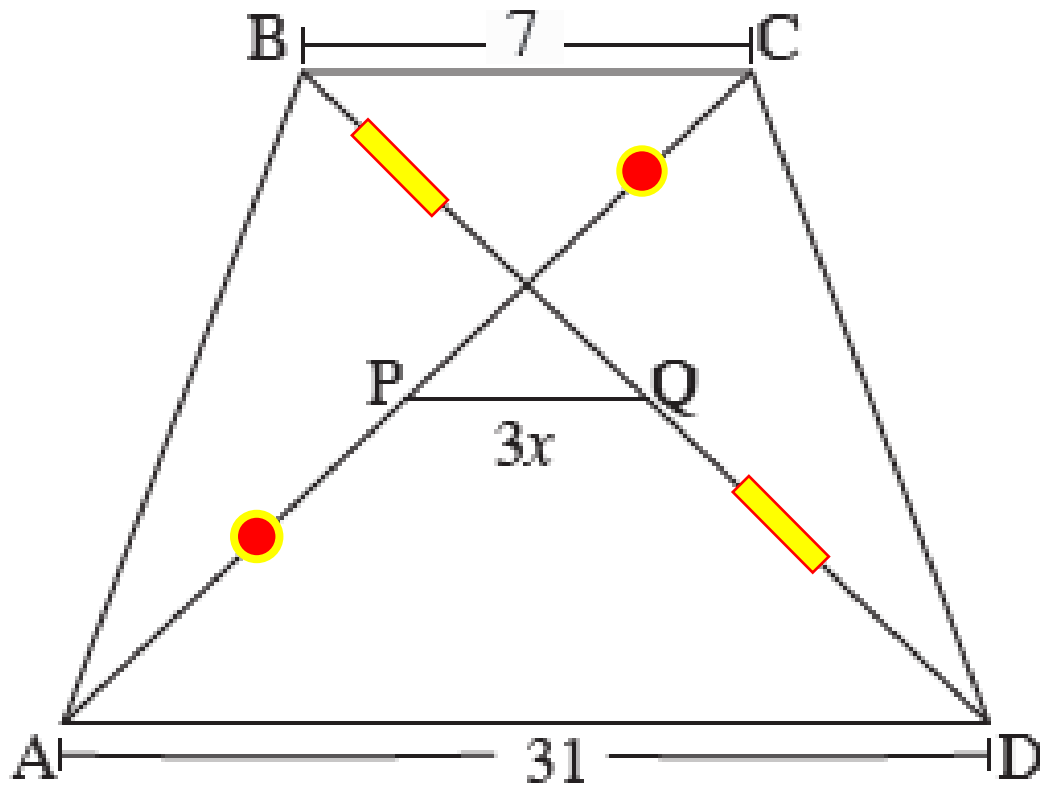
$$2x = x + 7$$

$$x = 7$$

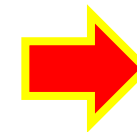


7. En el trapezio ABCD ($\overline{AD} \parallel \overline{BC}$), $AP = PC$ y $BQ = QD$. Halle PQ.

Segmento que une los puntos medios de las diagonales



$$MN = \frac{b-a}{2}$$



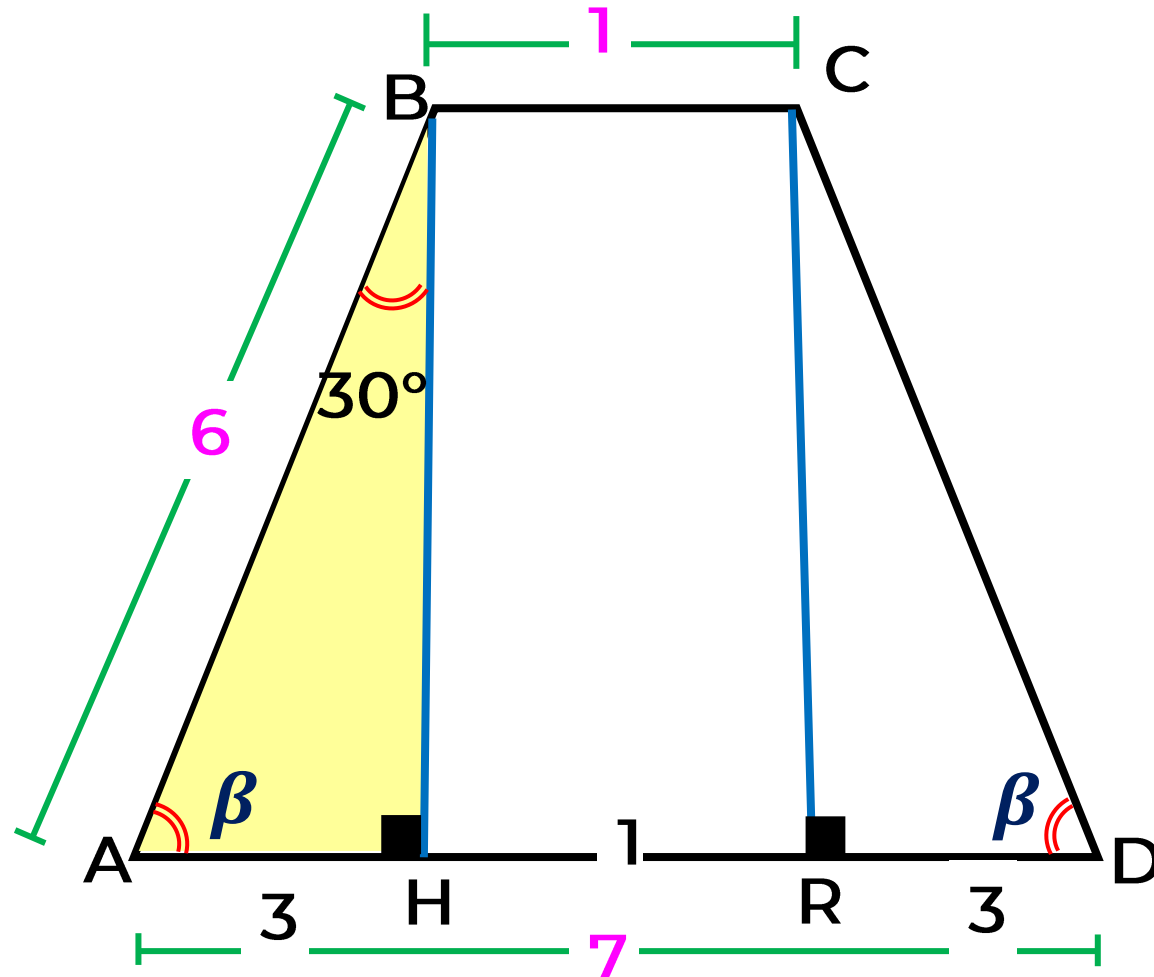
$$3x = \frac{31-7}{2}$$

$$3x = 12$$

$$x = 4$$



8. Se muestra una mesa trapezoidal isósceles, cuyas bases miden 7 m y 1 m; los lados laterales miden 6 m cada uno. Halle el valor de β .



- Trapecio $ABCD$ (Isósceles)
- Se trazan las alturas \overline{BH} y \overline{CR}
- $HBCR$ (Rectángulo)
 $BC = HR = 1$
- ADEMÁS
 $AH = RD = 3$
- $\triangle AHB$ (Notable $30^\circ - 60^\circ$)

$$x = 60^\circ$$