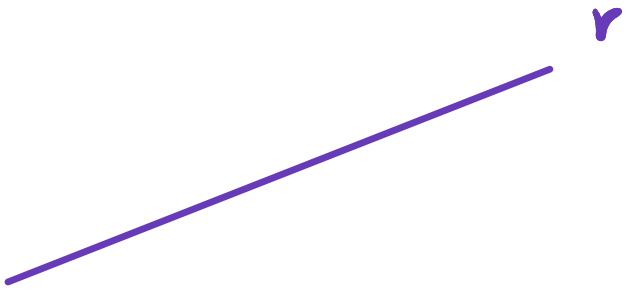
NOÇÕES DE GEOMETRIA PLANA

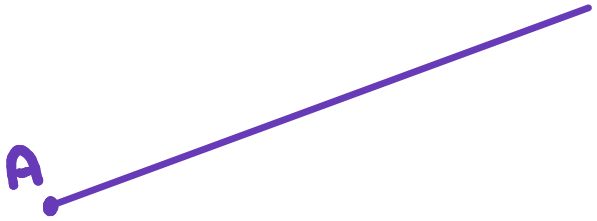
ELEMENTOS BÁSICOS

PONTO . A

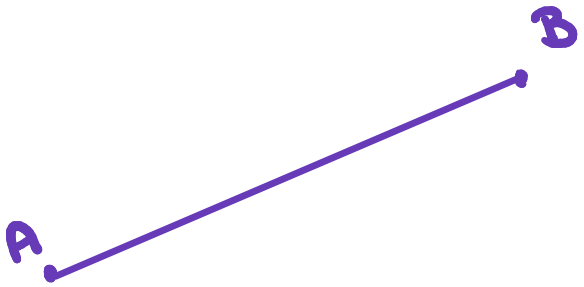
RETA



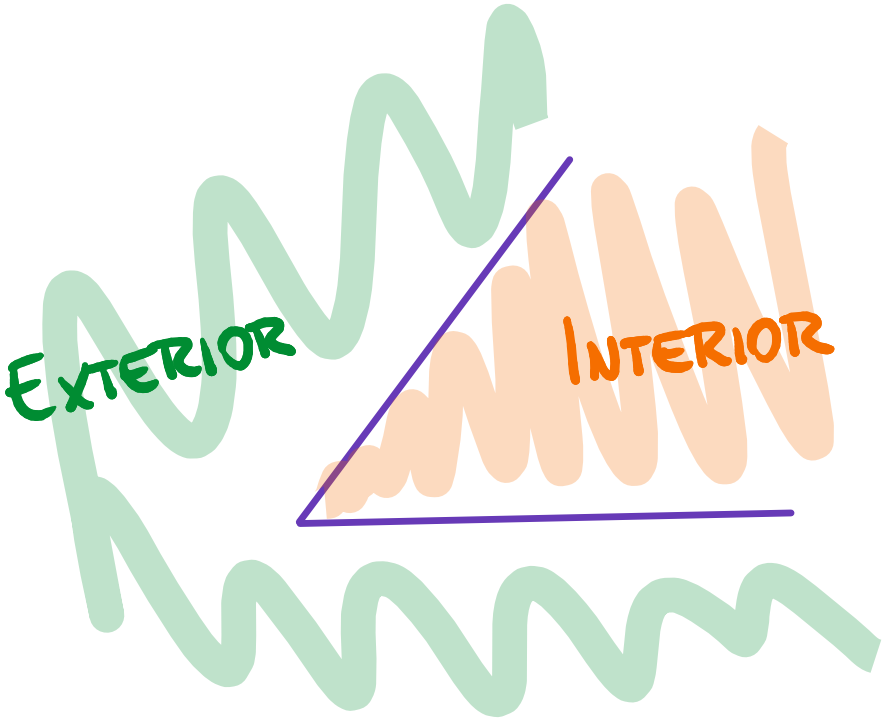
SEMI-RETA

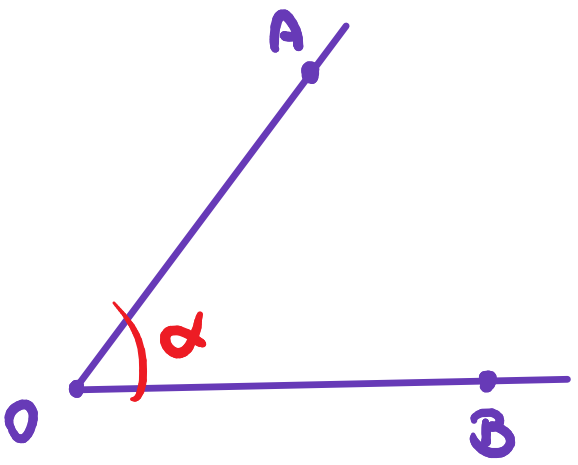


SEGMENTO DE RETA



ÂNGULOS

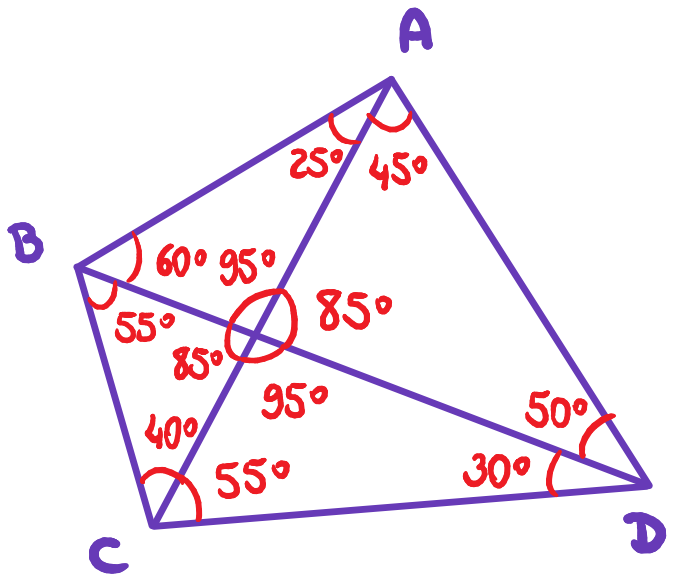




$\alpha = A\hat{O}B$

$\alpha = B\hat{O}A$

$\alpha = \hat{O}$



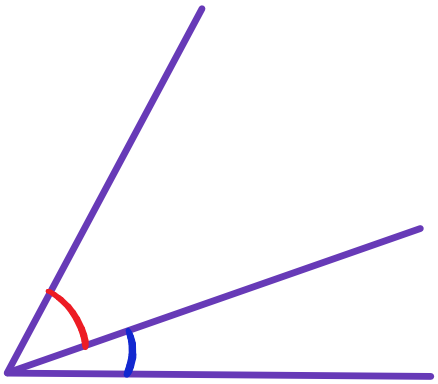
$A\hat{B}D = 60°$

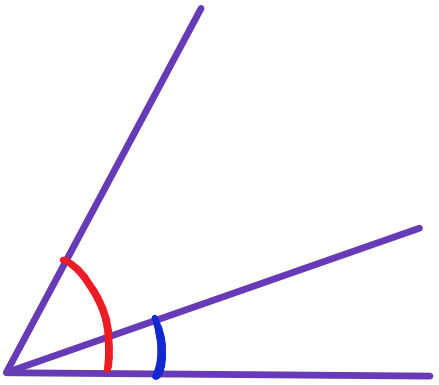
$A\hat{C}D = 55°$

$B\hat{A}C = 25°$

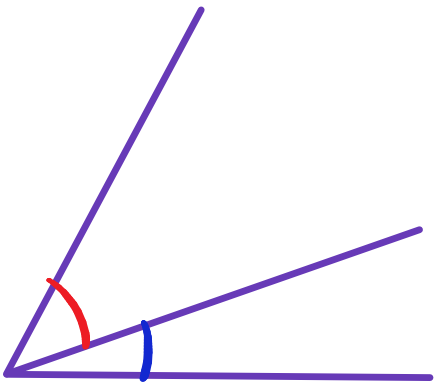
$B\hat{A}D = 70°$

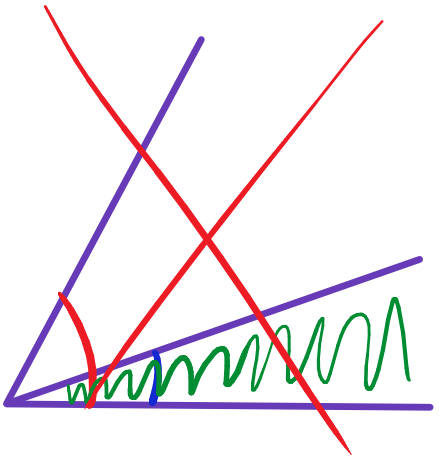
ÂNGULOS CONSECUTIVOS



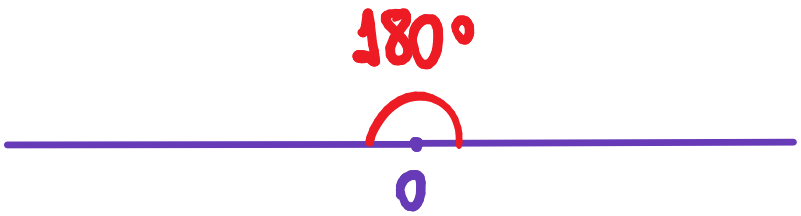


ÂNGULOS ADJACENTES

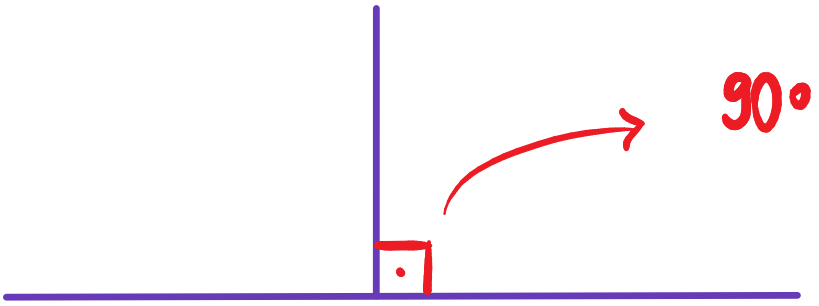




ÂNGULO RASO

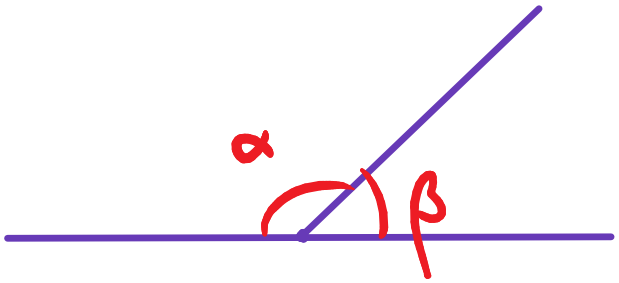


ÂNGULO RETO

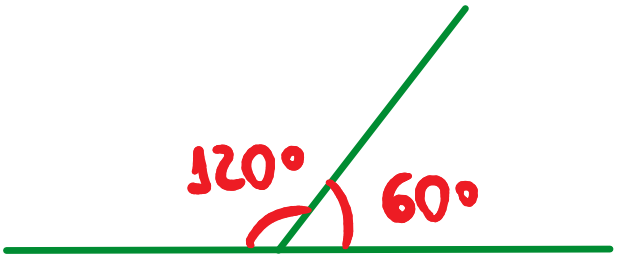


ÂNGULOS SUPLEMENTARES

ÂNGULOS CUJA SOMA É 180°



$$\alpha + \beta = 180°$$

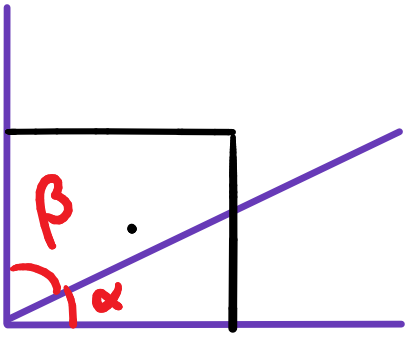


SUPLEMENTO DE 45°: $180° - 45° = 135°$

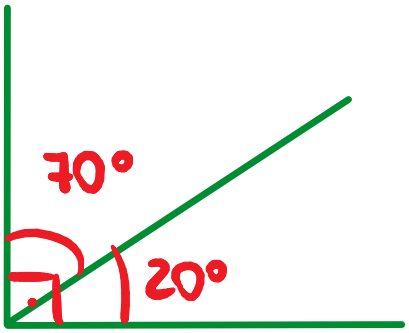
SUPLEMENTO DE x°: $180° - x$

ÂNGULOS COMPLEMENTARES

ÂNGULOS CUJA SOMA É 90°



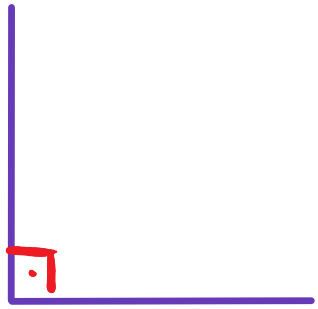
$$\alpha + \beta = 90°$$



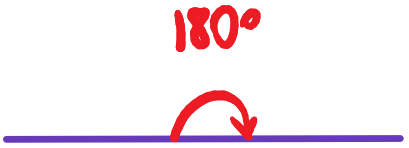
COMPLEMENTO DE 45°: $90° - 45° = 45°$

COMPLEMENTO DE x°: $90° - x$

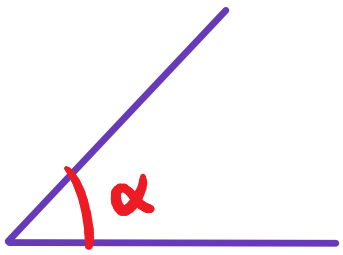
ÂNGULO RETO



ÂNGULO RASO

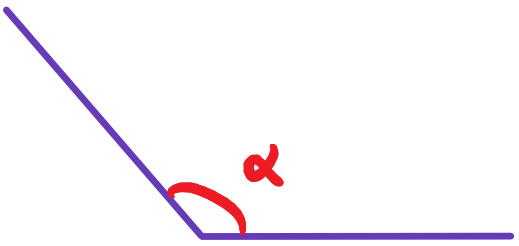


ÂNGULO AGUDO



$0 < \alpha < 90°$

ÂNGULO OBTUSO



$90° < \alpha < 180°$

EXEMPLO

O SUPLEMENTO DO COMPLEMENTO DO TRIPLO DE UM ÂNGULO É IGUAL AO DOBRO DO COMPLEMENTO DESSE ÂNGULO.

QUE ÂNGULO É ESSE?

Ângulo x

$$180 - (90 - 3x) = 2(90 - x)$$

$$\cancel{180} - 90 + 3x = \cancel{180} - 2x$$

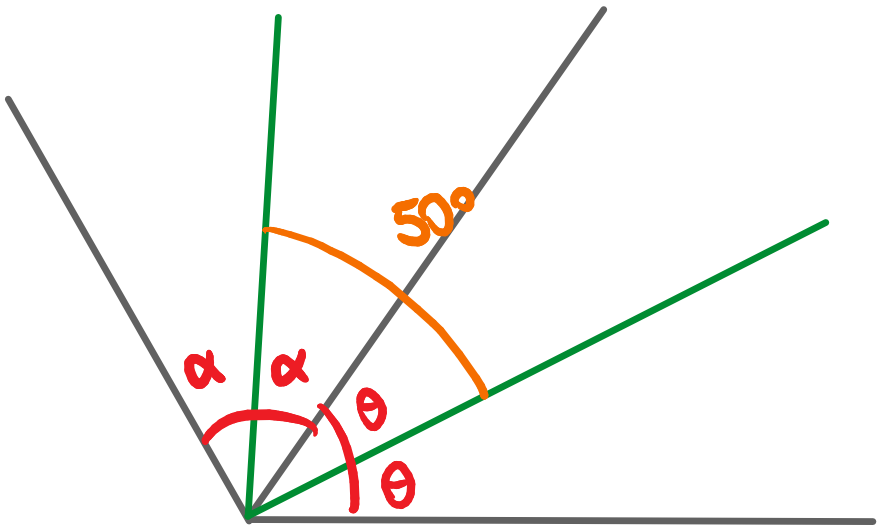
$$5x = 90°$$

$$x = 18°$$

EXEMPLO

AS BISSETRIZES DE DOIS ÂNGULOS ADJACENTES FORMAM 50° ENTRE SI.

SE UM DESSES ÂNGULOS É 5° MAIOR QUE O OUTRO, CALCULE O VALOR DESSES ÂNGULOS.



$$\begin{cases} \alpha + \theta = 50° \\ 2\alpha - 2\theta = 5° \end{cases}$$

$$\begin{cases} 2\alpha + 2\theta = 100° \\ 2\alpha - 2\theta = 5° \end{cases}$$

$$4\alpha = 105°$$

$$\alpha = \frac{105°}{4}$$

$$\alpha = 26{,}25°$$

$$52{,}5°$$

$$4\theta = 95°$$

$$\theta = \frac{95°}{4}$$

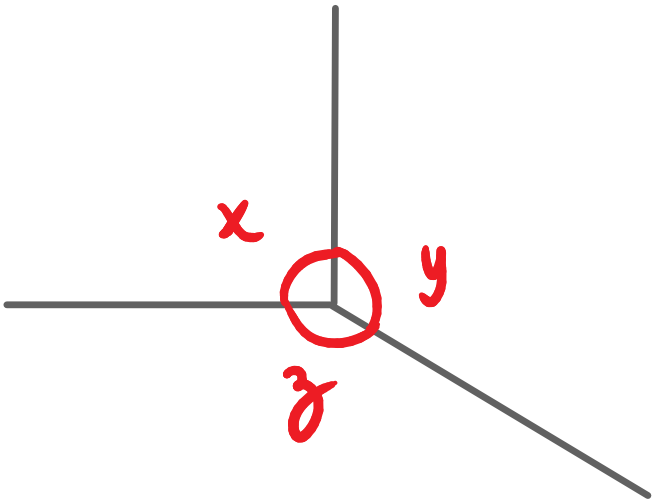
$$\theta = 23{,}75$$

$$47{,}5°$$

EXEMPLO

NA FIGURA ABAIXO, OS ÂNGULOS x, y E z ESTÃO, RESPECTIVAMENTE, NA PROPORÇÃO 3 : 4 : 5.

CALCULE O VALOR DO MAIOR ÂNGULO.



$$x \propto 3 \rightarrow \quad x = 3k$$

$$y \propto 4 \rightarrow \quad y = 4k$$

$$z \propto 5 \rightarrow \quad z = 5k$$

$$x + y + z = 360°$$

$$3k + 4k + 5k = 360°$$

$$12k = 360°$$

$$k = 30°$$

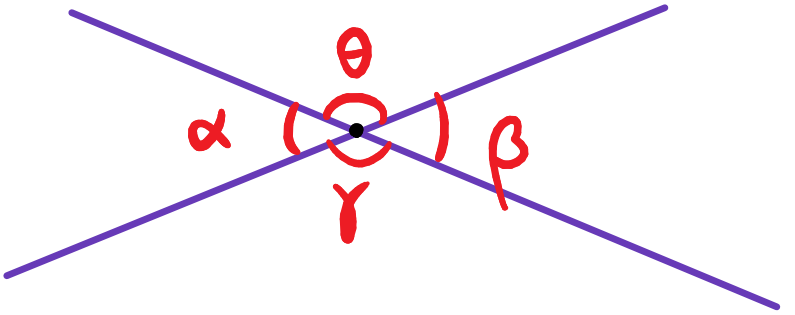
$$x = 90° \; ; \; y = 120° \; ; \; z = 150°$$

$$90 : 120 : 150$$

$$3 : 4 : 5$$

ÂNGULOS OPOSTOS PELO VÉRTICE

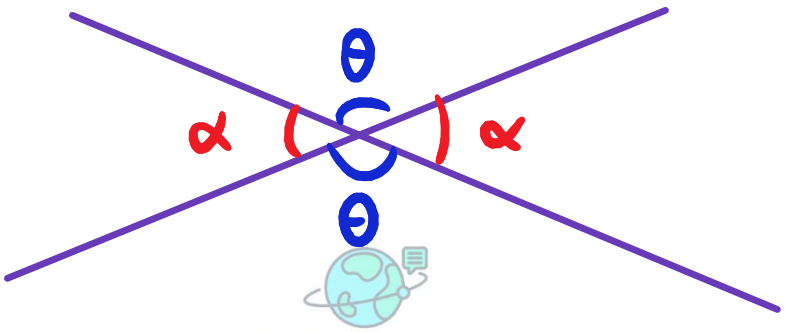
(OPV)



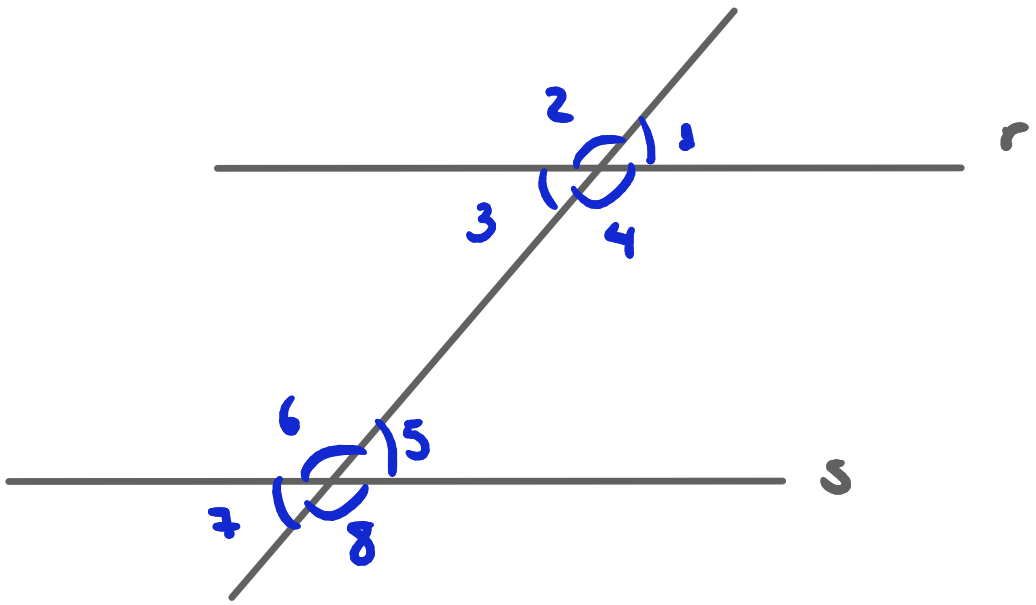
$$\begin{cases} \alpha + \theta = 180^\circ \rightarrow \theta = 180 - \alpha \\ \beta + \theta = 180^\circ \rightarrow \theta = 180 - \beta \end{cases}$$

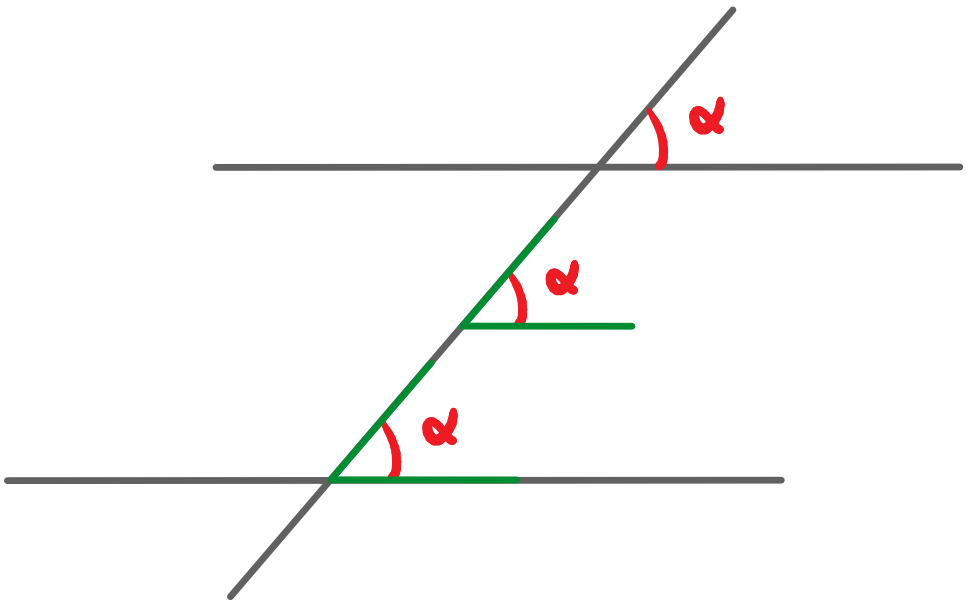
$$180 - \alpha = 180 - \beta$$

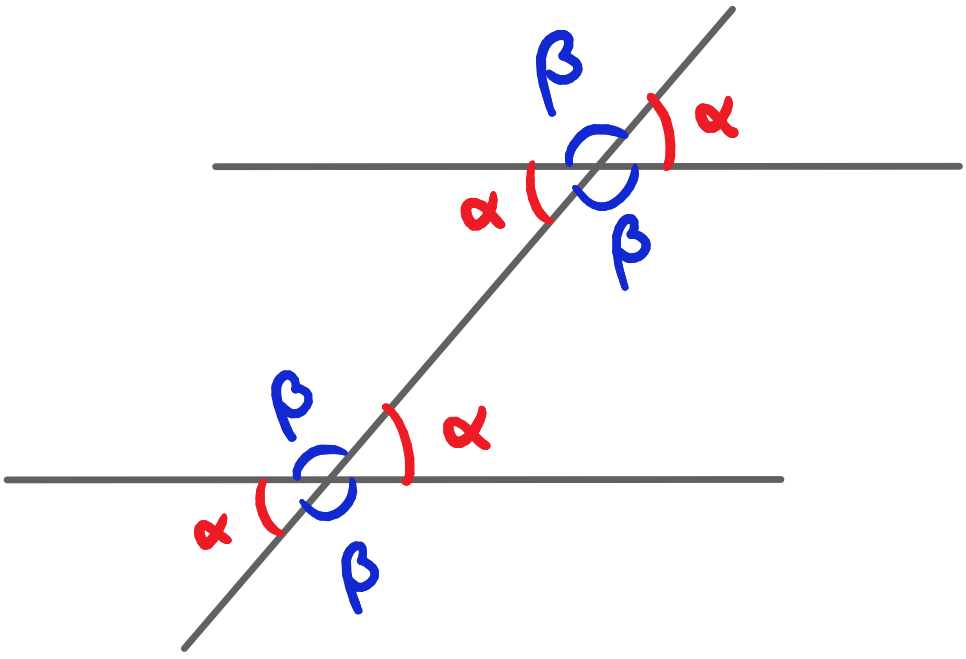
$$\alpha = \beta$$



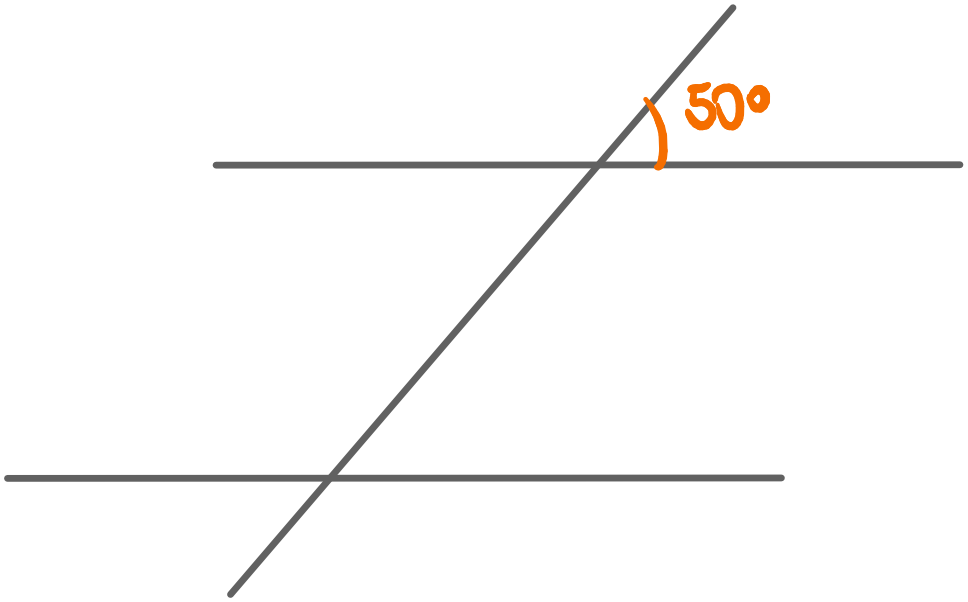
PARALELAS CORTADAS POR UMA TRANSVERSAL

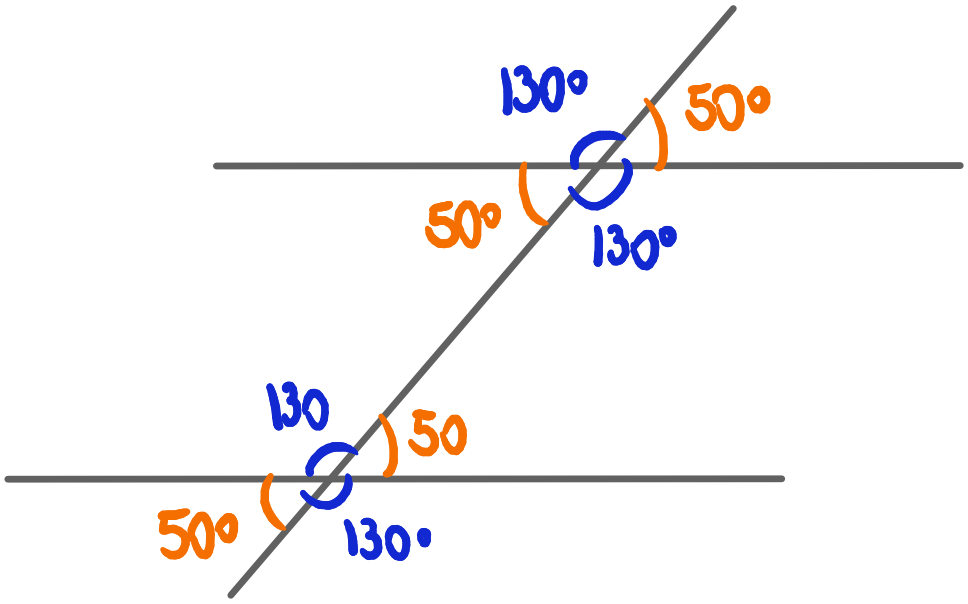




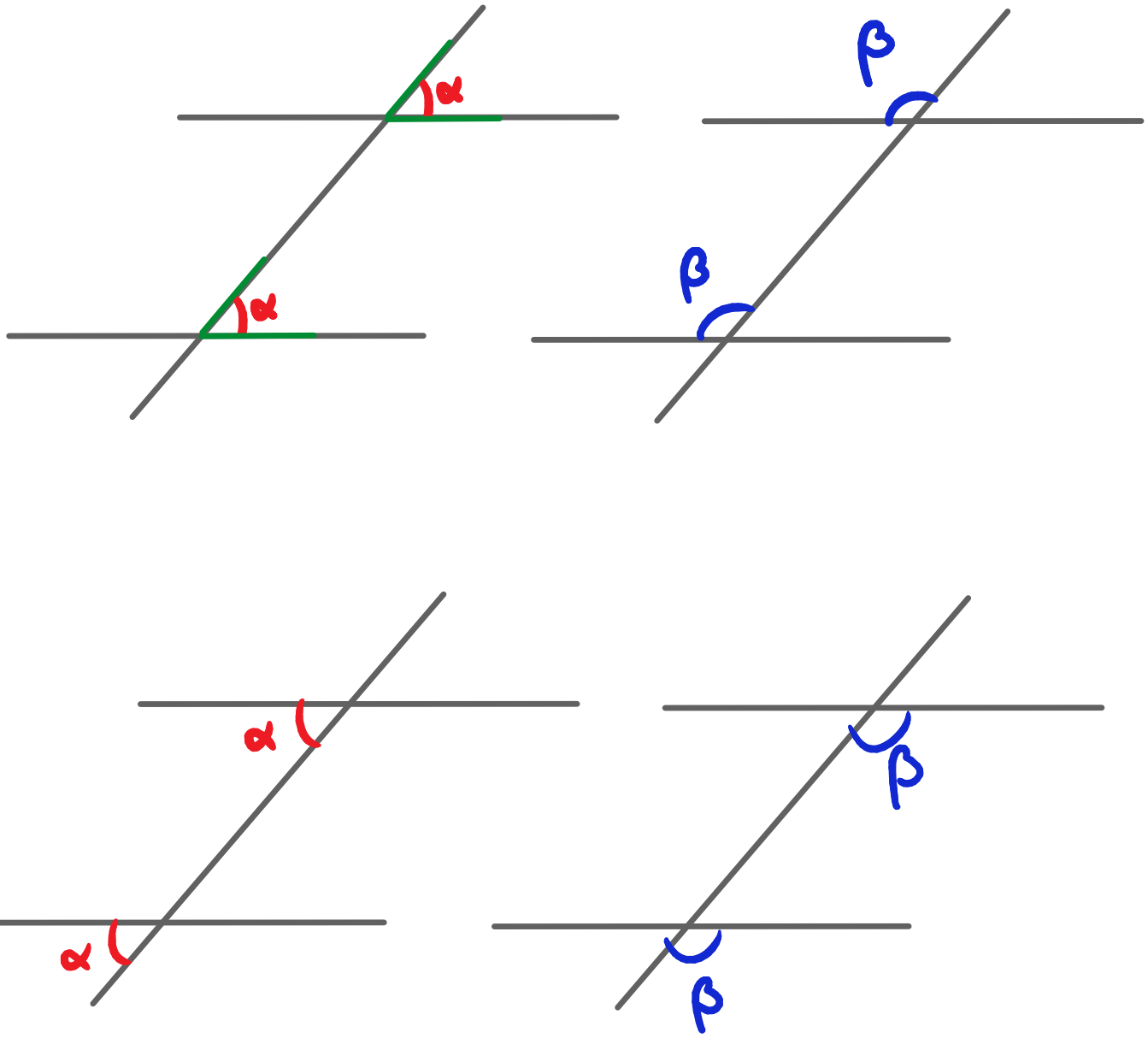


$$\alpha + \beta = 180°$$


50°

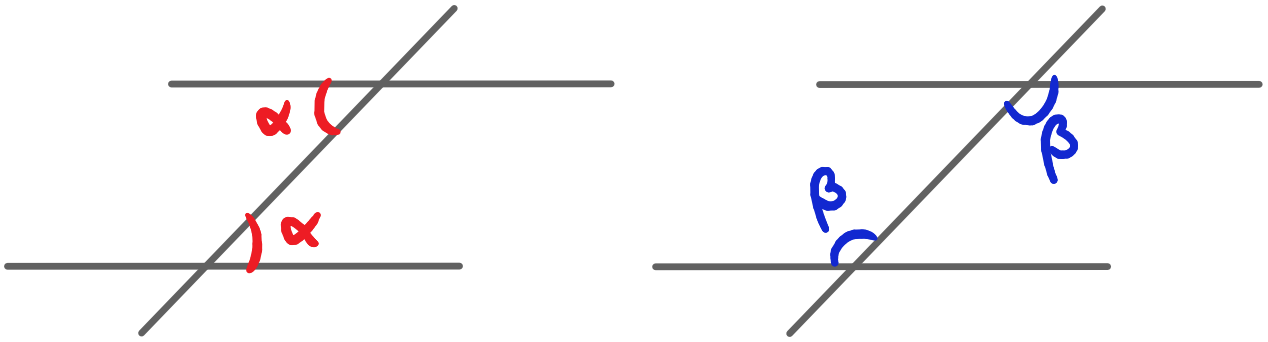

130°
50°
50°
130°
130
50
50°
130°

CORRESPONDENTES



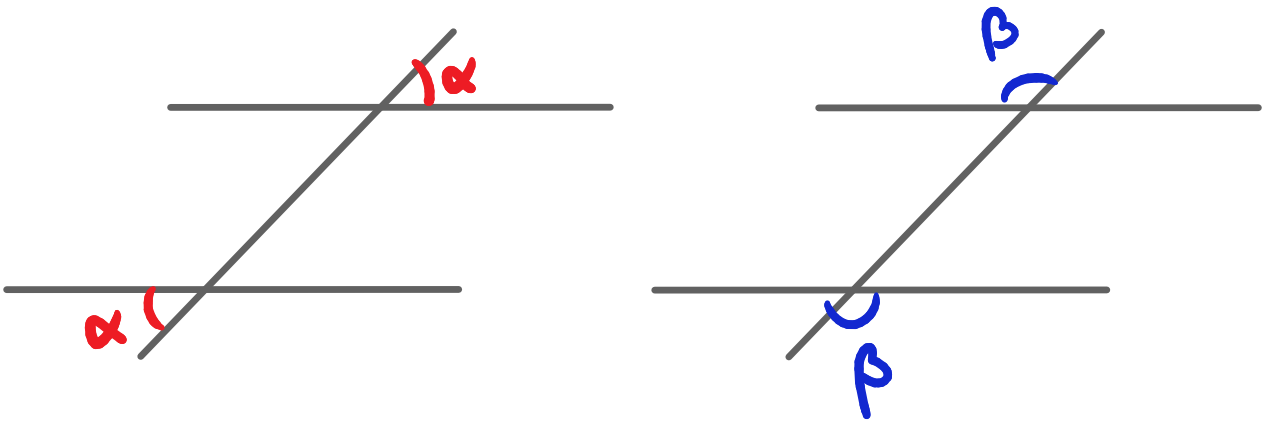
IGUAIS

ALTERNOS INTERNOS



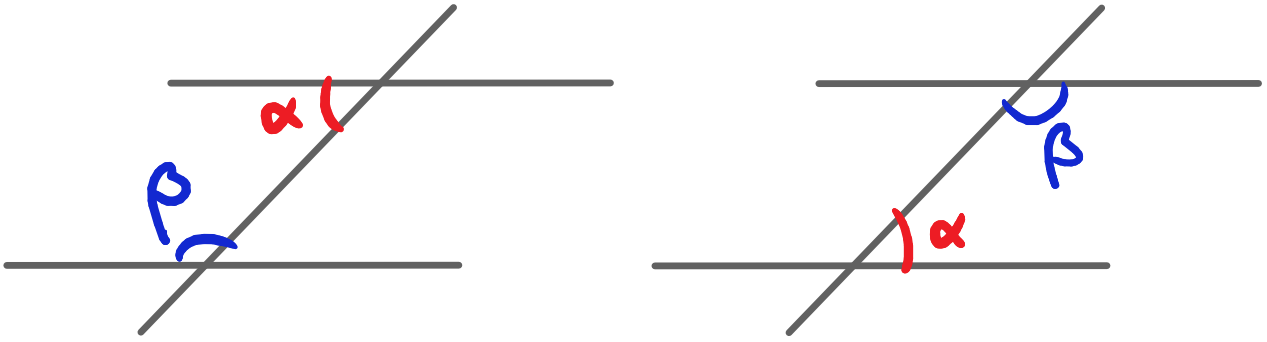
IGUAIS

ALTERNOS EXTERNOS



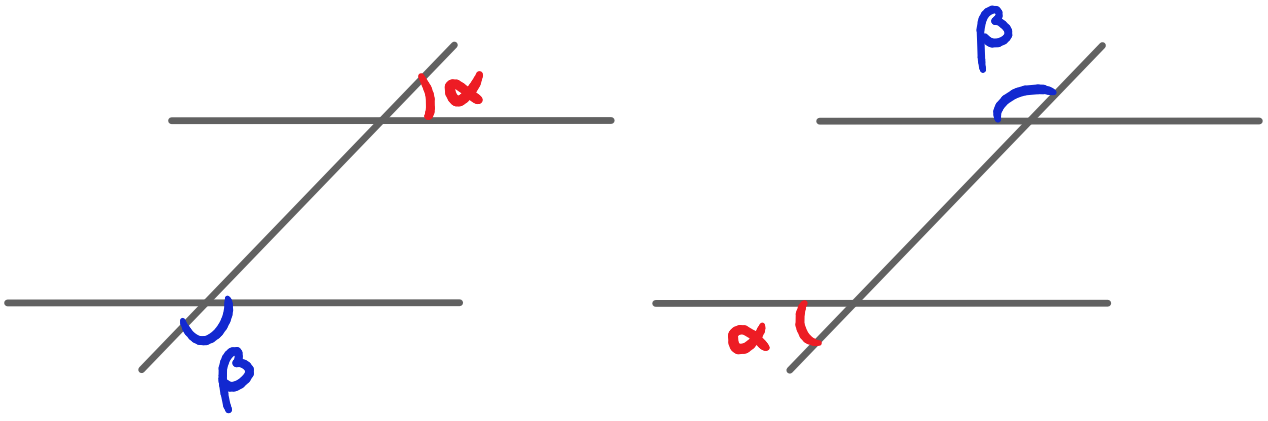
IGUAIS

COLATERAIS INTERNOS



SUPLEMENTARES

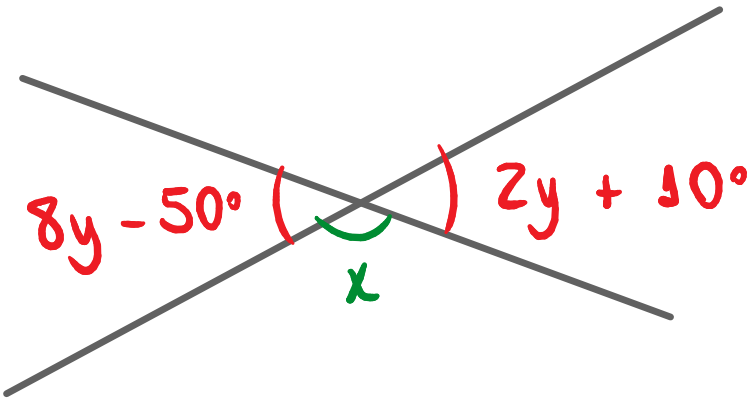
COLATERAIS EXTERNOS

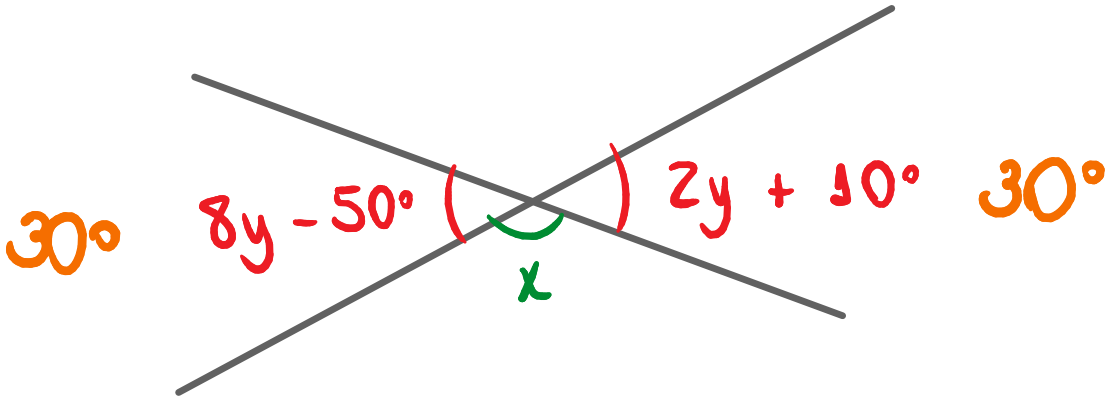


SUPLEMENTARES

EXEMPLO

CALCULE O VALOR DO ÂNGULO x:





$$8y - 50° = 2y + 10°$$

$$6y = 60°$$

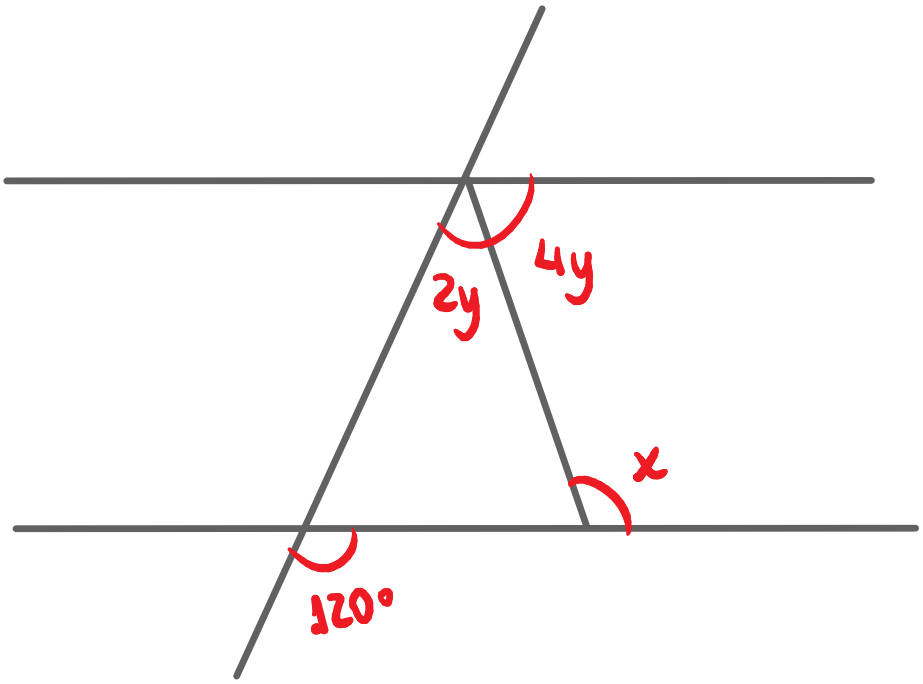
$$y = 10°$$

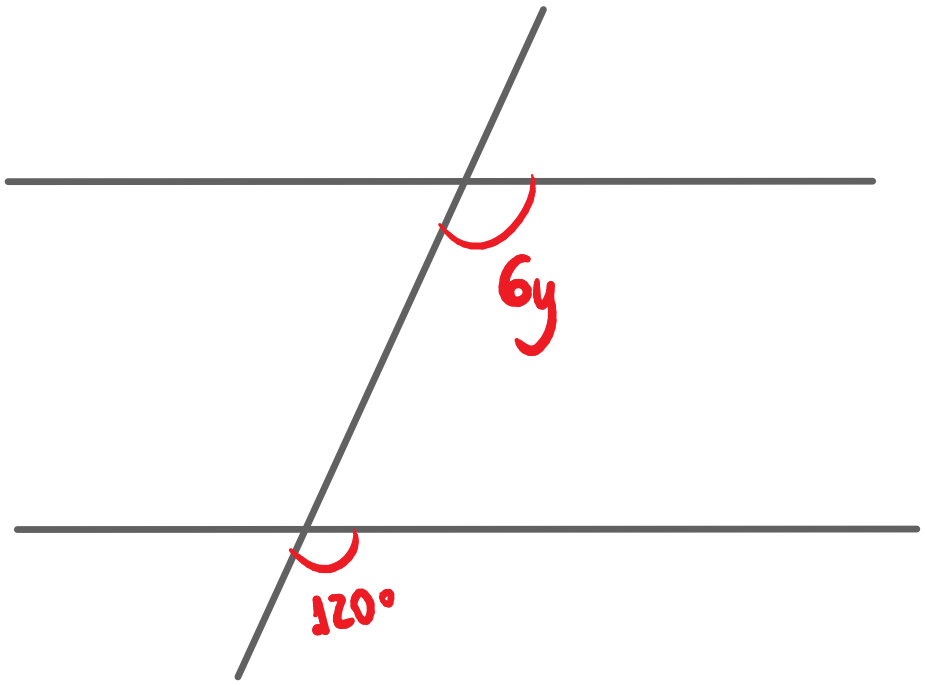
$$x = 180° - 30°$$

$$x = 150°$$

EXEMPLO

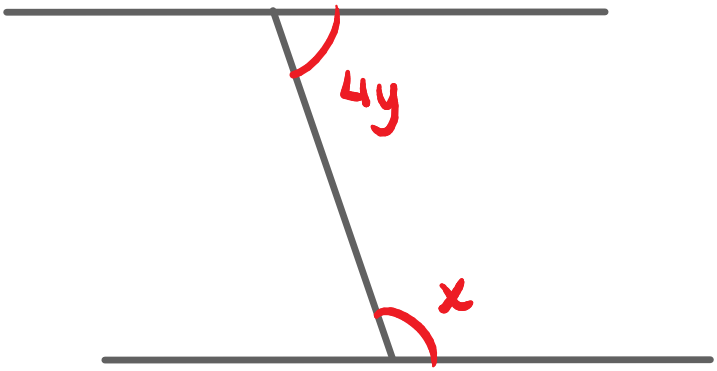
CALCULE O VALOR DO ÂNGULO x:





$$6y = 120°$$

$$y = 20°$$



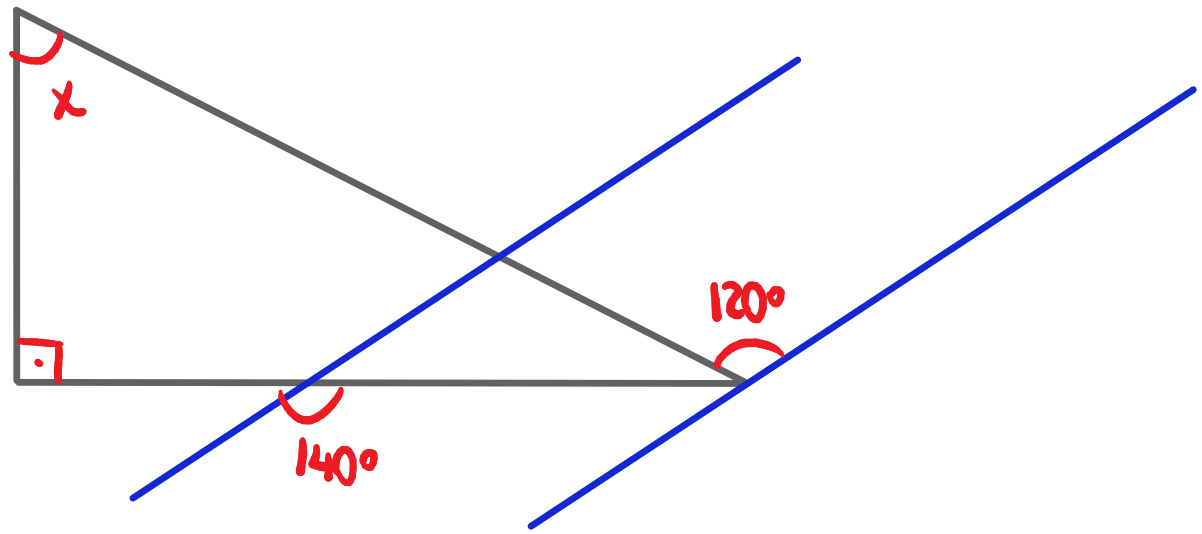
$$x + 4y = 180°$$

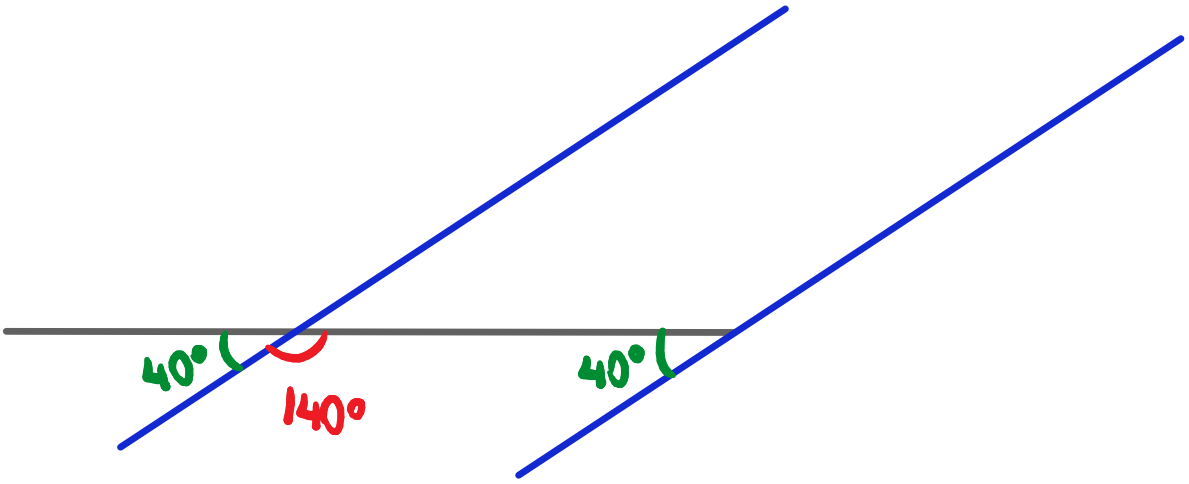
$$x + 80° = 180°$$

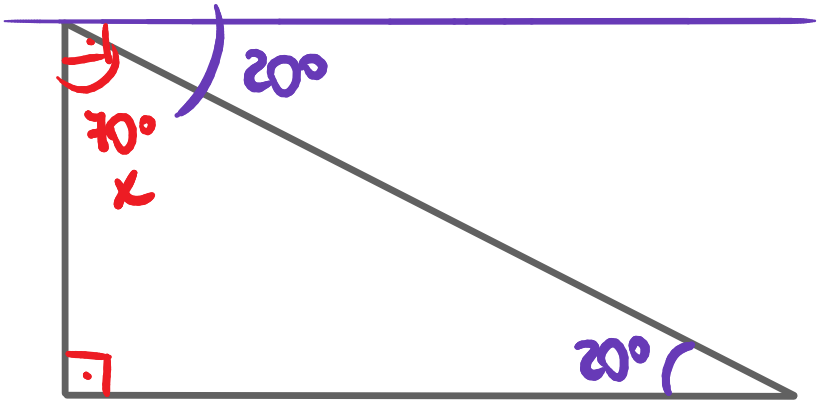
$$x = 100°$$

EXEMPLO

CALCULE O VALOR DO ÂNGULO x:



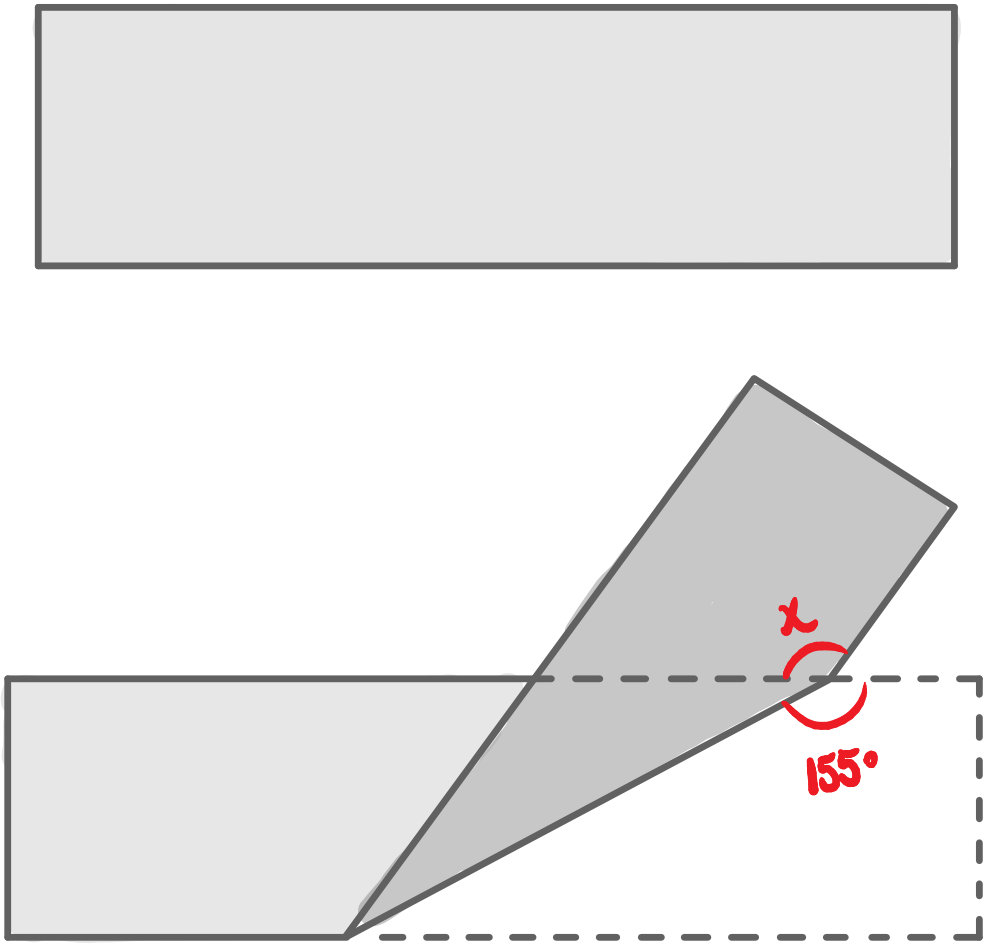


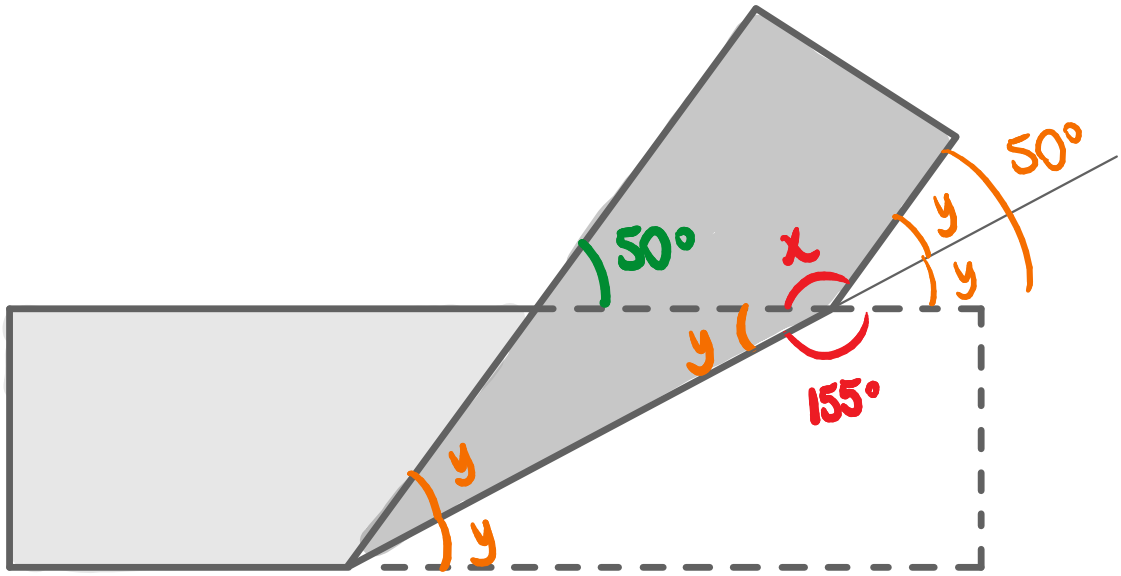


EXEMPLO

UMA FOLHA DE PAPEL RETANGULAR É DOBRADA CONFORME A FIGURA.

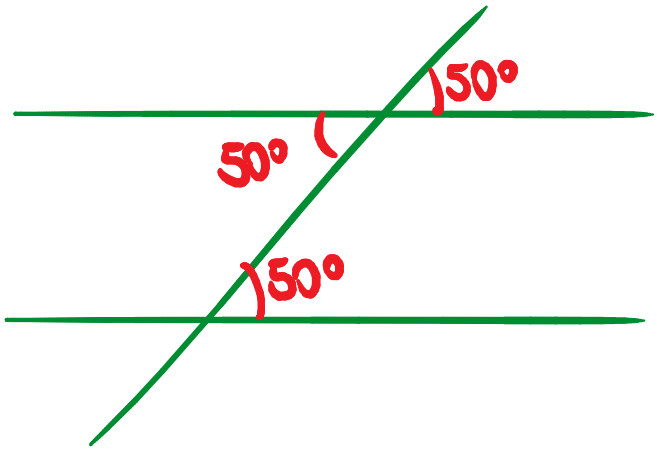
CALCULE O VALOR DO ÂNGULO x.





$y = 180° - 155°$

$y = 25°$

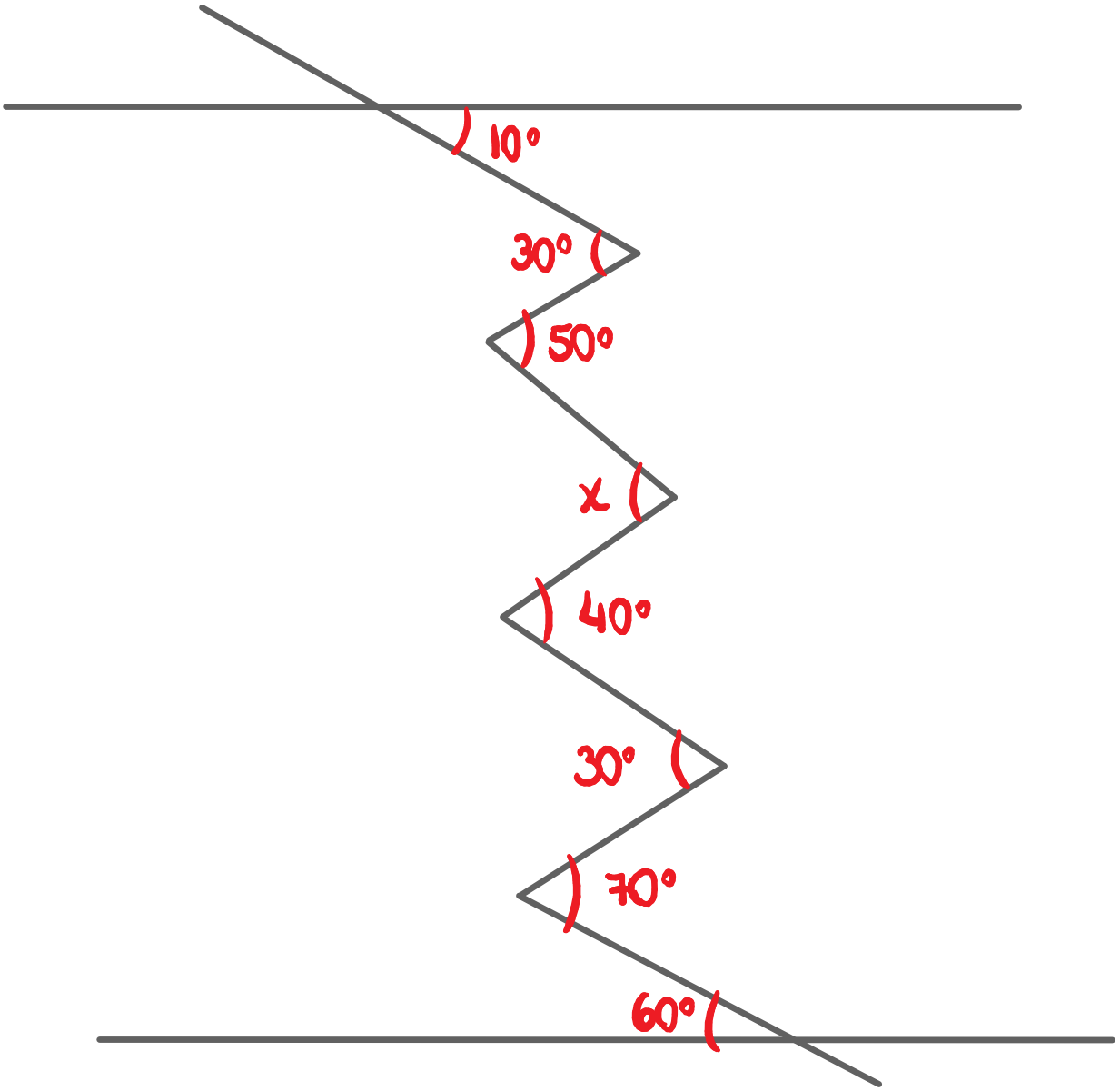


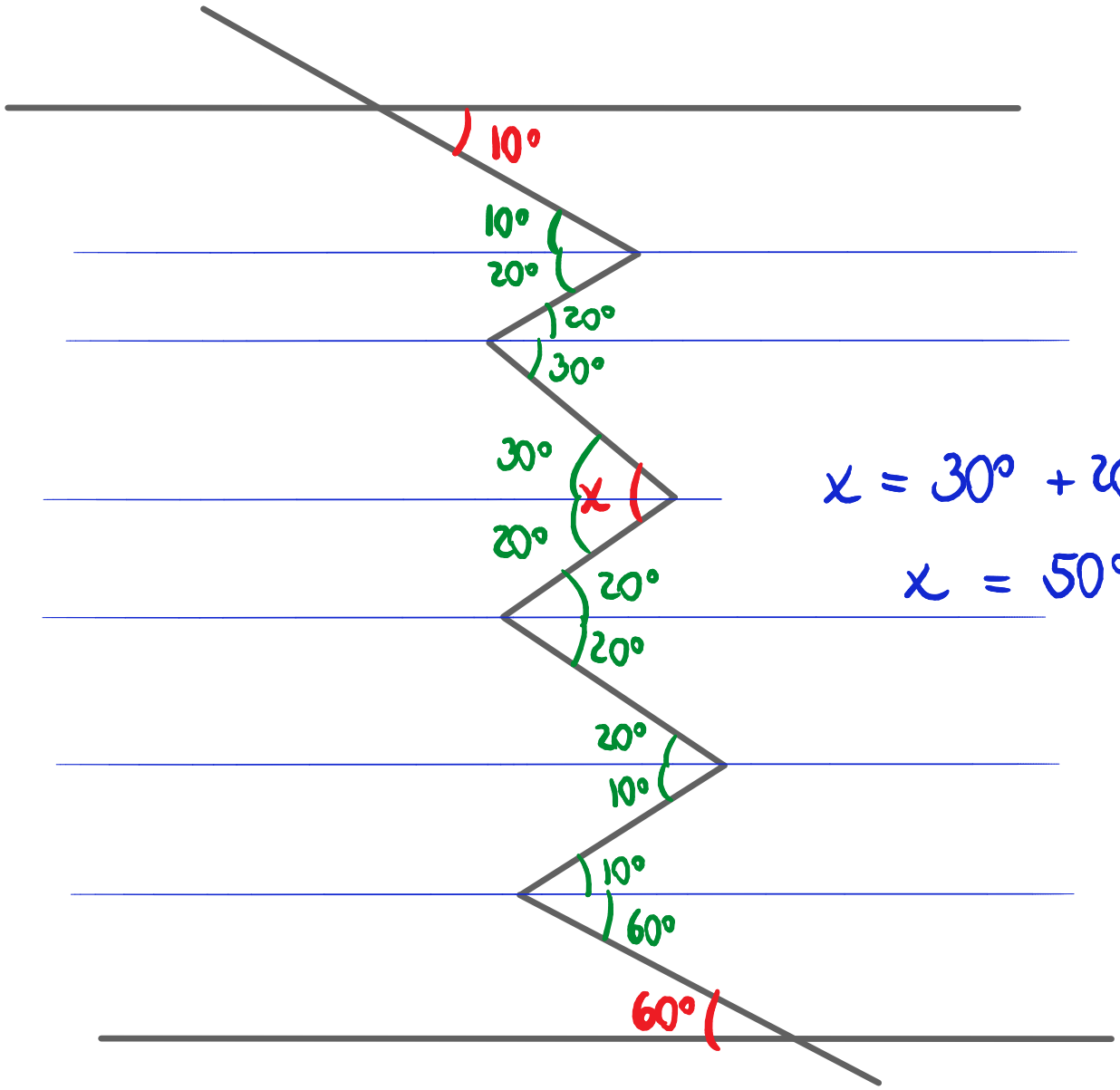
$x + 50° = 180°$

$x = 130°$

EXEMPLO

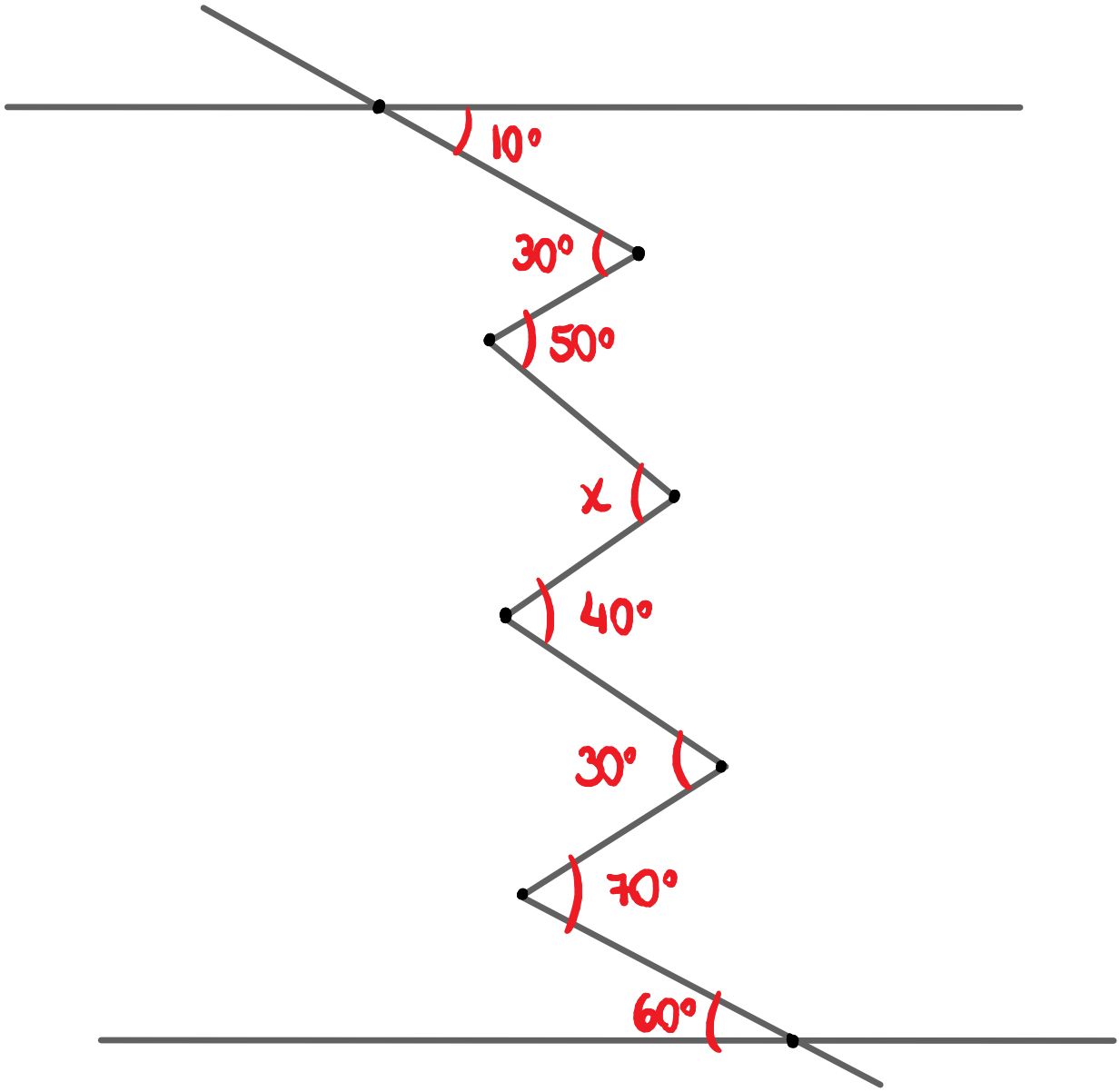
DETERMINE O VALOR DO ÂNGULO x.





$x = 30° + 20°$

$x = 50°$



T. SARRUS

$$30 + x + 30 + \cancel{60} = \cancel{10} + 40 + \cancel{50} + 70$$

$$x = 110° - 60°$$

$$x = 50°$$