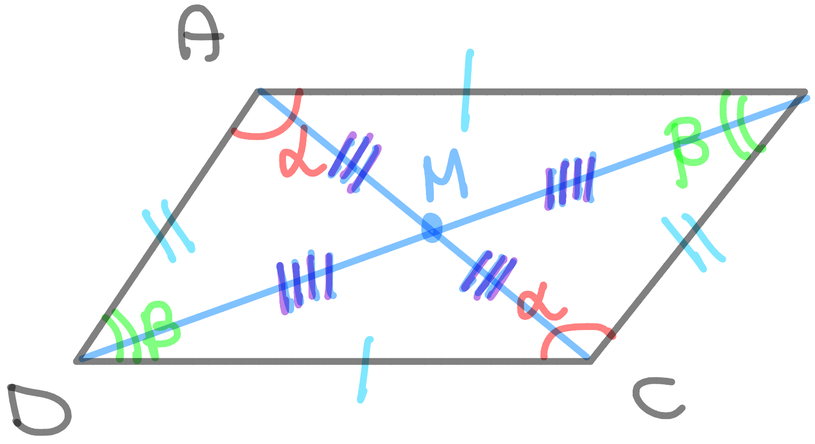
QUADRILÁTEROS NOTÁVEIS

1 PARALELOGRAMO

$A = b \cdot h$



$\overline{AB} \parallel \overline{DC}$ e $\overline{AD} \parallel \overline{BC}$

***Propriedades**

P1 $\overline{AB} = \overline{DC}$ e $\overline{AD} = \overline{BC}$

P2 $\hat{A} = \hat{C}$ e $\hat{B} = \hat{D}$

P3 $\alpha + \beta + \alpha + \beta = 360°$

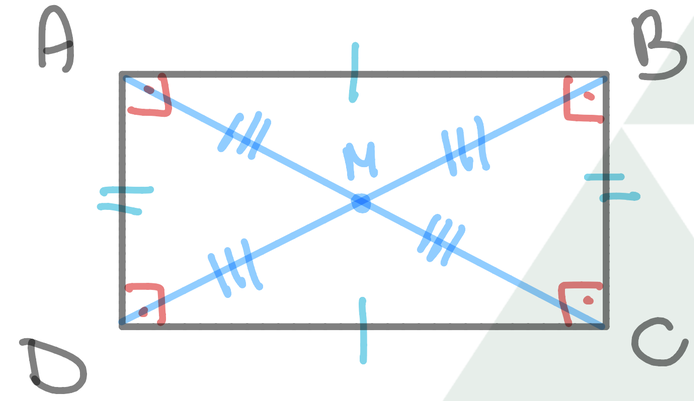
$2\alpha + 2\beta = 360° \ (\div 2)$

$\alpha + \beta = 180°$

P4 As diagonais se cortam ao meio

2 RETÂNGULO

$A = b \cdot h$

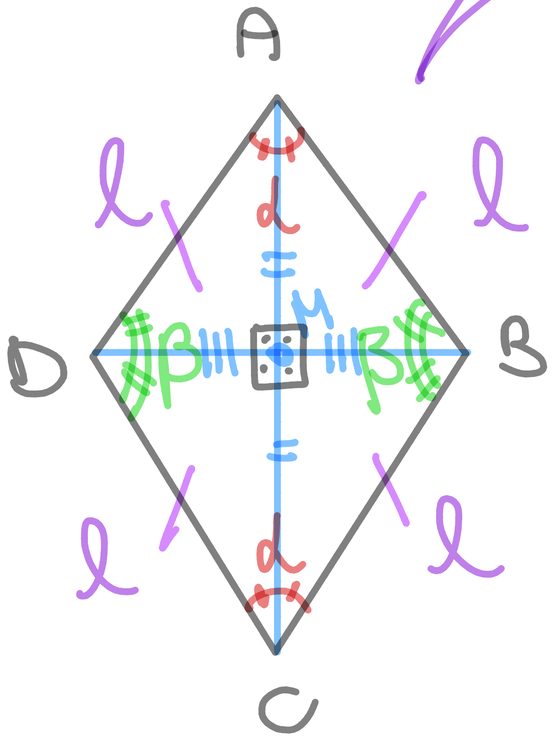


As diagonais são congruentes!

$(\overline{AC} = \overline{BD})$

3 LOSANGO

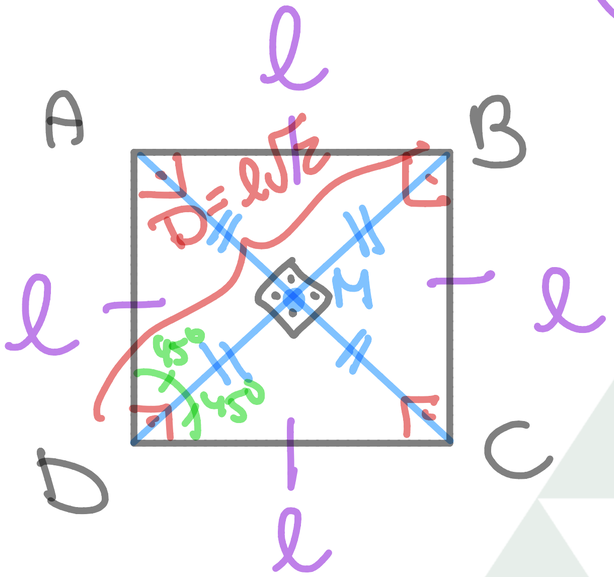
$$A = \frac{D \cdot d}{2}$$



↳ As diagonais são perpendiculares entre si e bissetrizes internas!

4 QUADRADO

$$A = l^2$$

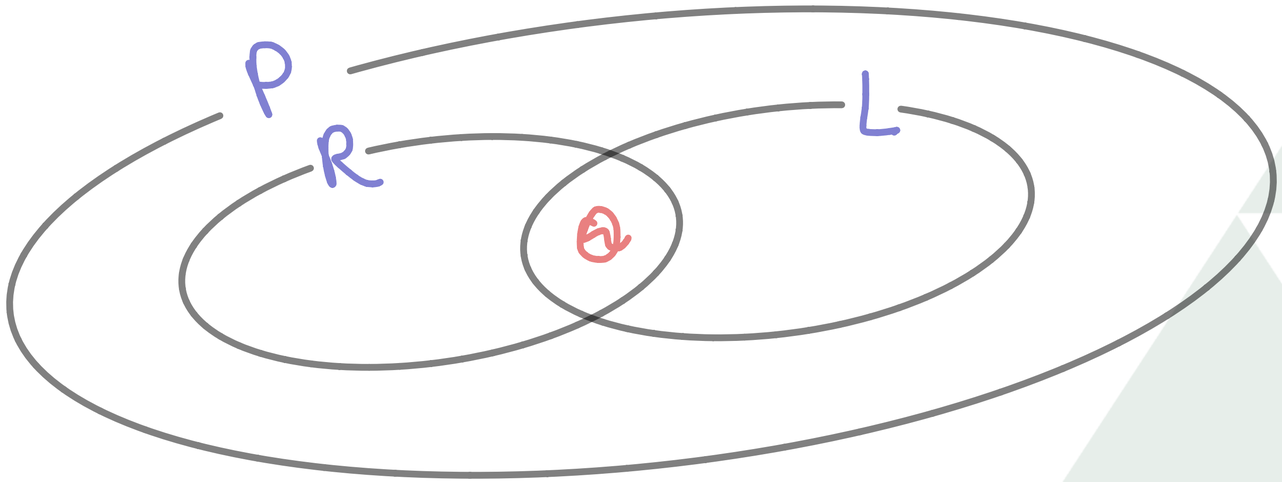


↳ As diagonais são congruentes, perpendiculares entre si e bissetrizes internas ∎

MESTRES DA MATEMÁTICA

OBS 1: Todo retângulo, todo losango e todo quadrado são PARALELOGRAMOS.

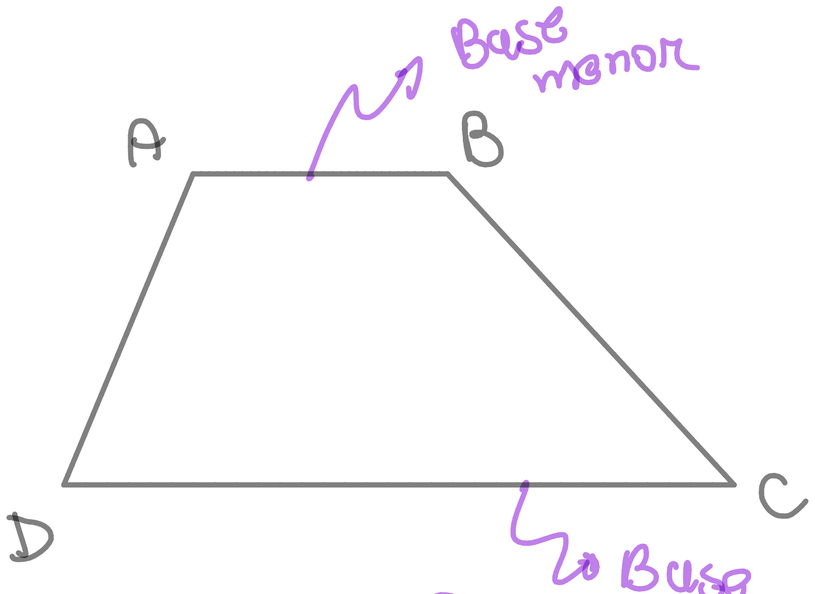
OBS 2: Todo quadrado é um retângulo e um losango.



MESTRES DA MATEMÁTICA

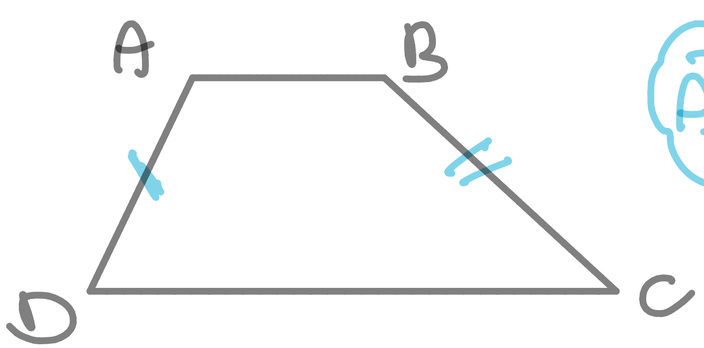
5 TRAPÉZIO

$$A = \frac{(b+B)\cdot H}{2}$$



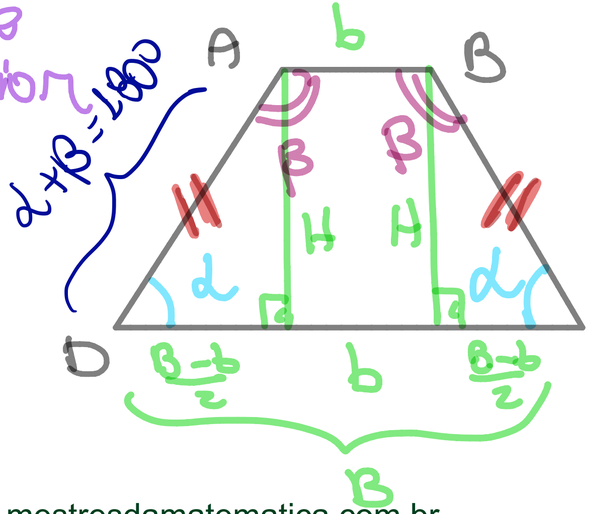
$\overline{AB} \parallel \overline{DC}$

5.1 ESCALENO



$\overline{AD} \neq \overline{BC}$

5.2 ISÓSCELES

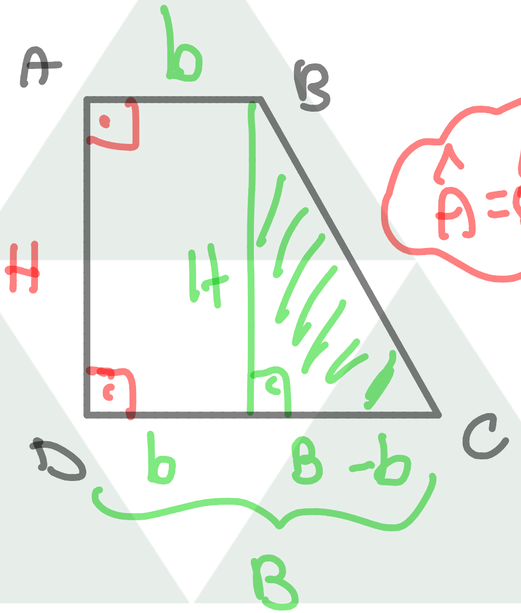


$\overline{AD} = \overline{BC}$

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

$\hat{D} = \hat{C}$

5.3 RETÂNGULO

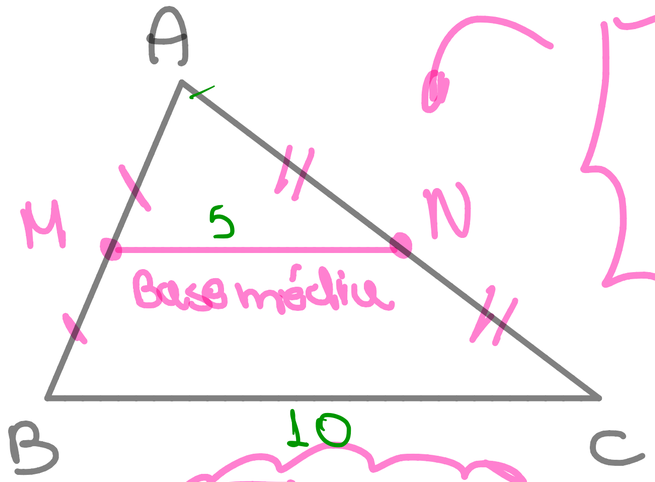


$\hat{A} = \hat{D} = 90°$

MESTRES DA MATEMÁTICA

OBS. FINAL: BASE MÉDIA (importantíssimo!!)

1) TRIÂNGULO

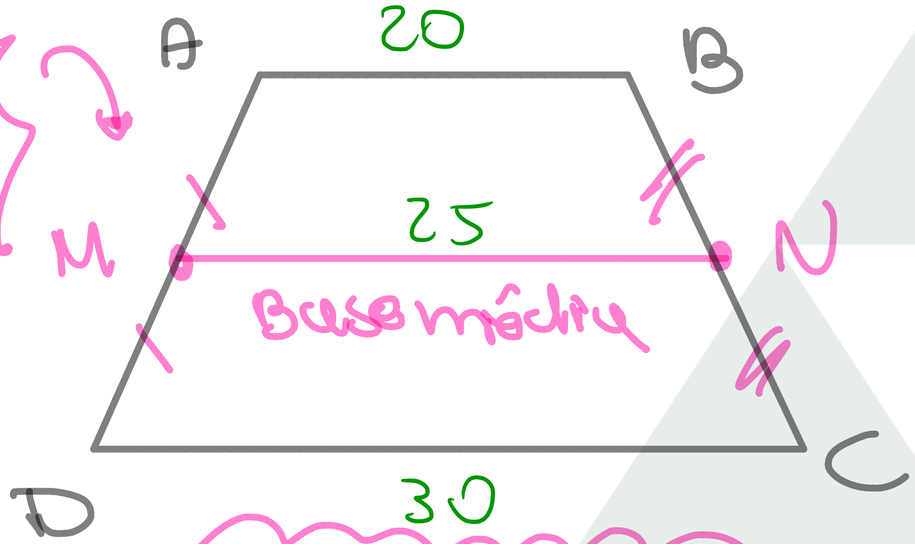


M e N são pontos médios

$\overline{MN} \parallel \overline{BC}$

$\overline{MN} = \frac{\overline{BC}}{2}$

2) TRAPÉZIO

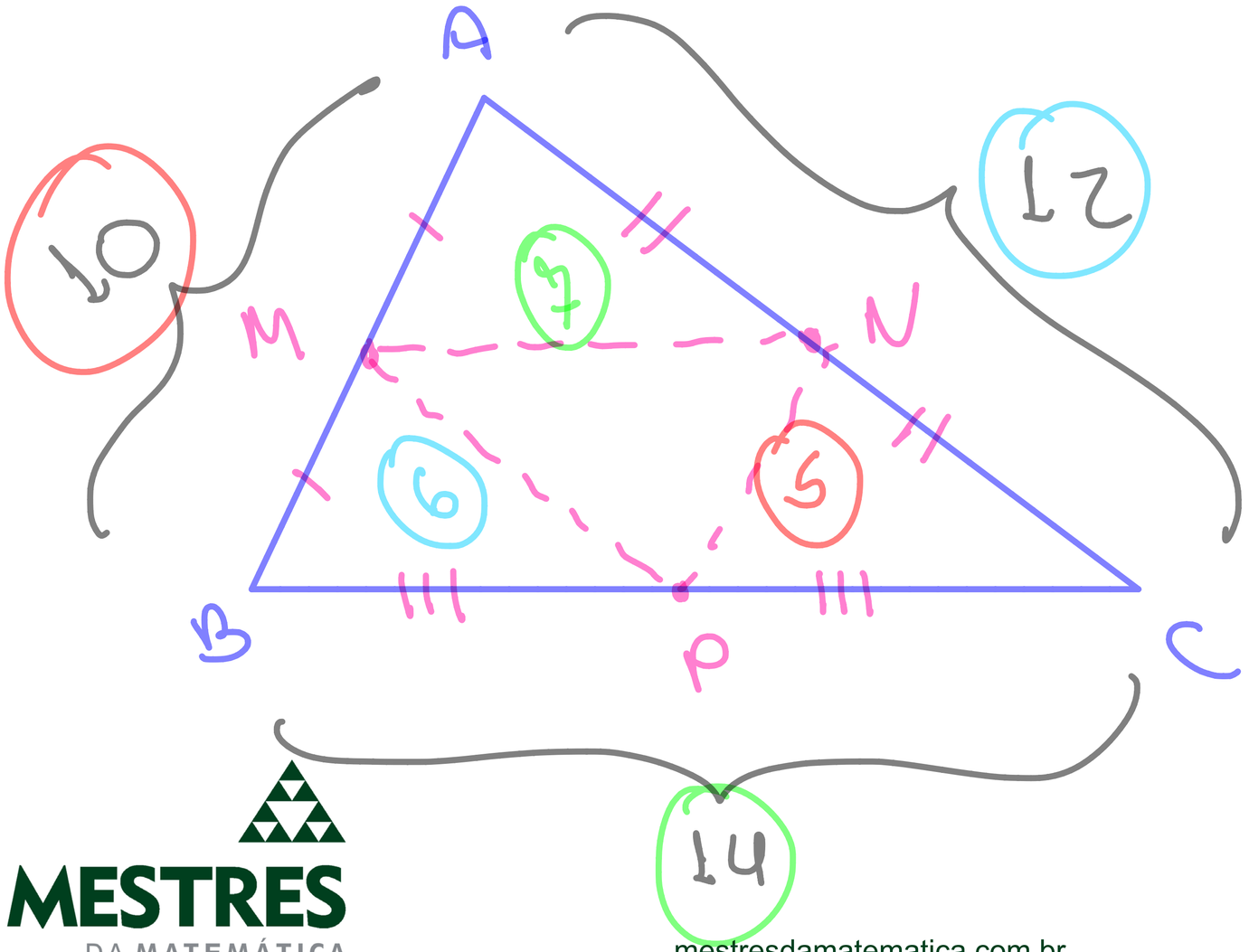


$\overline{MN} \parallel \overline{AB} \parallel \overline{DC}$

$\overline{MN} = \frac{\overline{AB} + \overline{DC}}{2}$

Exemplo 1

- M, N e P são pontos médios
- $2p_{\Delta MNP} = ?$

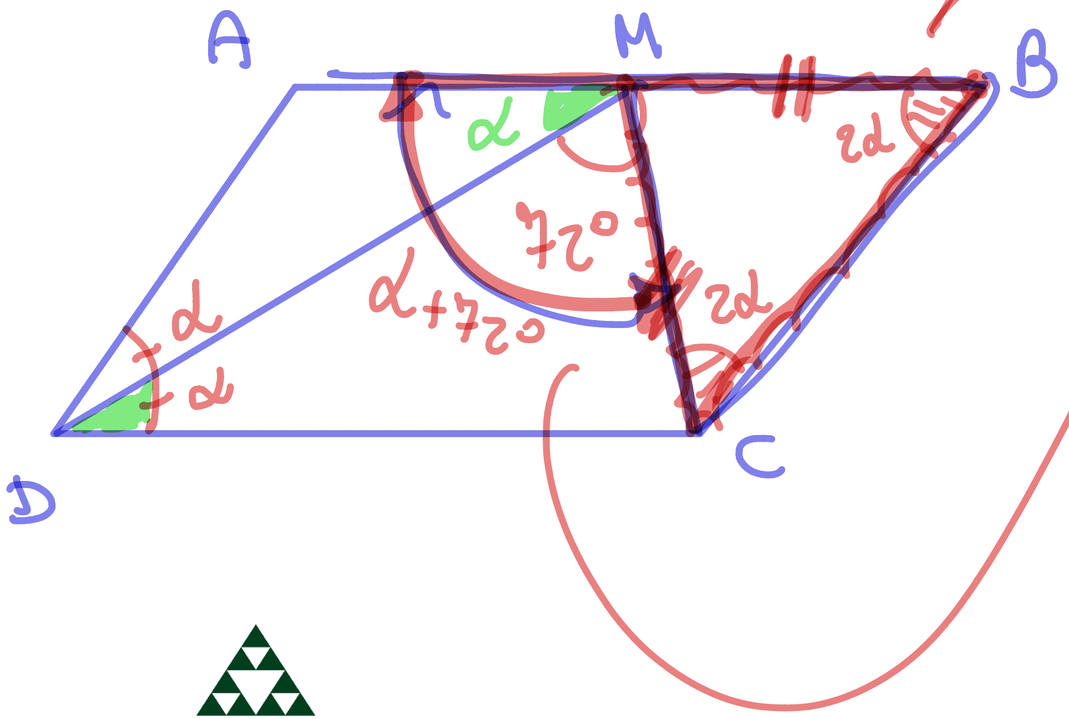


R: $2p_{\Delta MNP} = 7+6+5$

$= 18$ u

Exemplo 2

- $ABCD$ é um paralelogramo
- $\overline{DM}$ é bissetriz de $\hat{D}$
- $D\hat{M}C = 72^\circ$
- $\overline{BM} = \overline{CM}$
- $\hat{B} = ?$



$\hat{B} = 2\alpha$

$= 2 \cdot 24^\circ$

$= 48^\circ$ //

(Teor. do ângulo ext.)

$\alpha + 72^\circ = 2\alpha + 2\alpha$

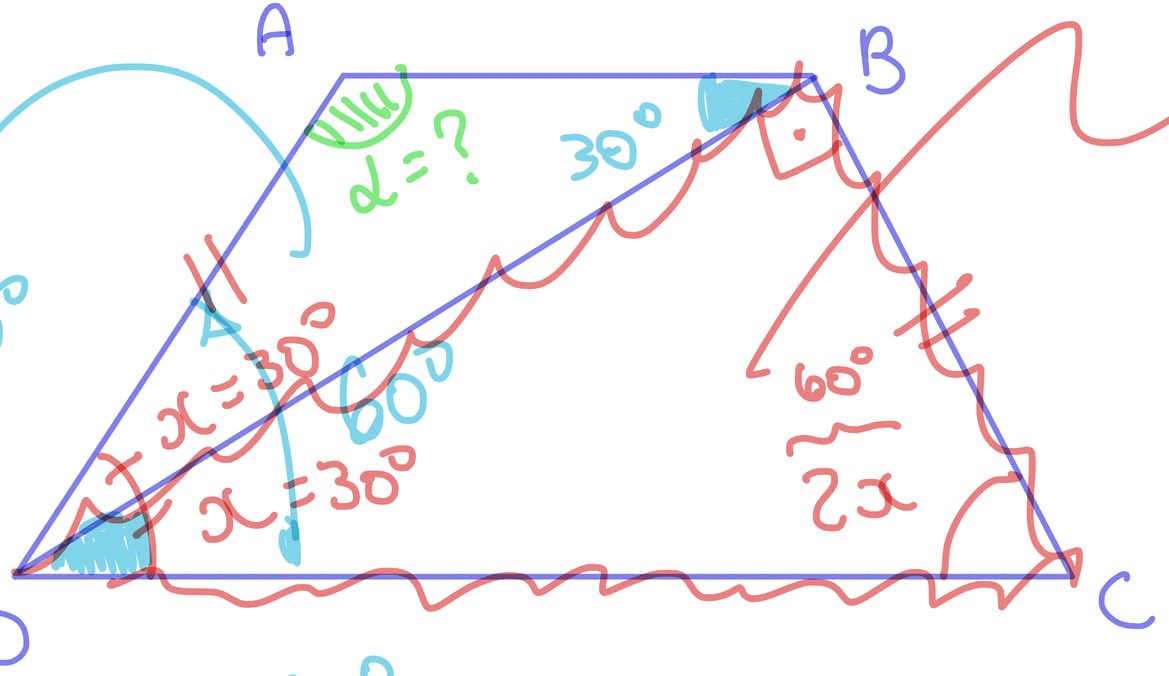
$\alpha + 72^\circ = 4\alpha$

$72^\circ = 3\alpha$

$\alpha = 24^\circ$

Exemplo 3

- ABCD é um trapézio isósceles
- $\overline{DB}$ é bissetriz de $\hat{D}$
- $\overline{DB} \perp \overline{BC}$ (perpendicular)
- $D\hat{A}B = ?$



$\alpha + 30^\circ + 30^\circ = 180^\circ$

$\alpha + 60^\circ = 180^\circ$

$\boxed{\alpha = 120^\circ}$

$60^\circ + \alpha = 180^\circ$

$\alpha = 120^\circ$ //

$90^\circ + x + 2x = 180^\circ$

$3x = 90^\circ$

$\boxed{x = 30^\circ}$

MESTRES DA MATEMÁTICA

Exemplo 4

- $\alpha + \beta = ?$
- $\overline{AP}$ e $\overline{BP}$ são bissetrizes
- $A\hat{P}B = 70°$
- ABCD é um quadrilátero

$x + y + 70° = 180°$

$x + y = 110°$

$\alpha + \beta + 2x + 2y = 360°$

$\alpha + \beta + 2(x + y) = 360°$

$\alpha + \beta + 2 \cdot 110° = 360°$

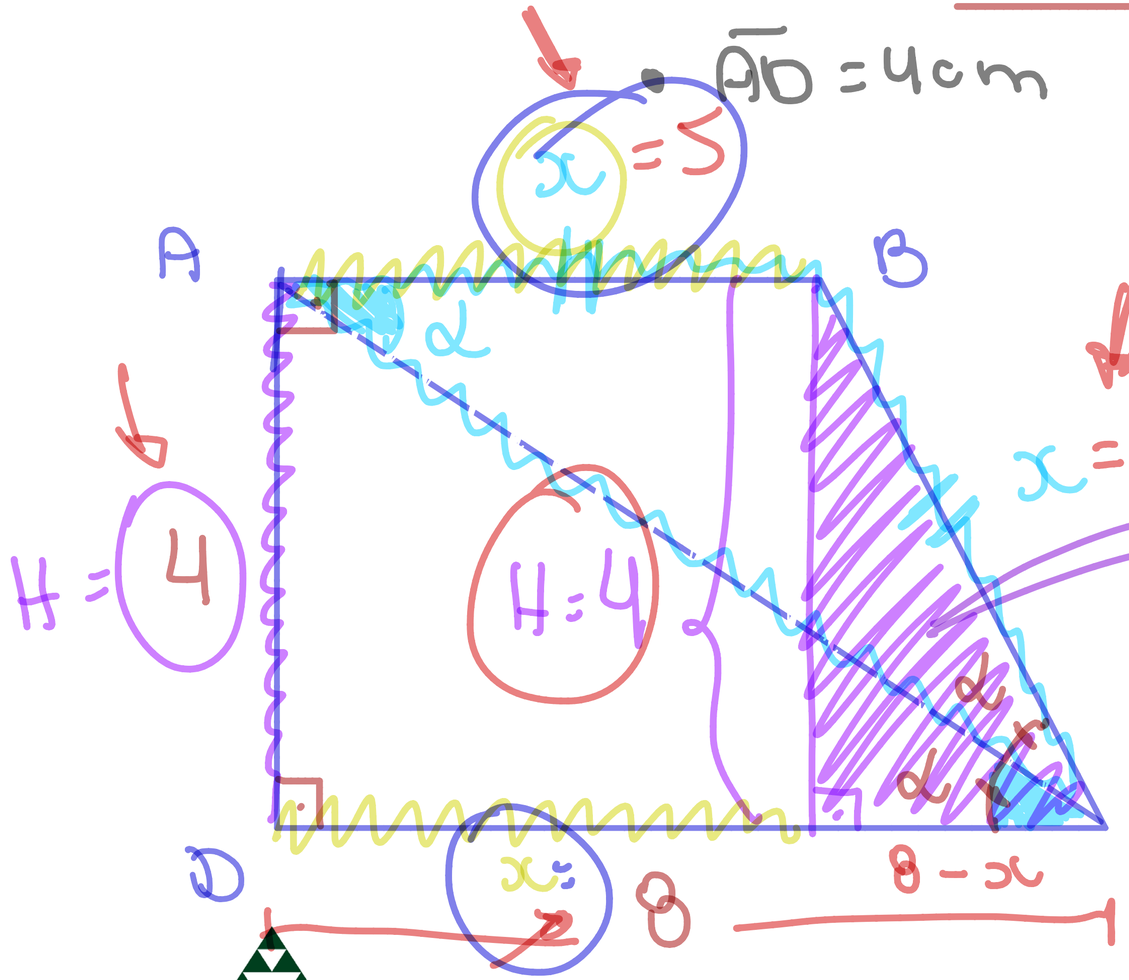
$\alpha + \beta + 220° = 360°$

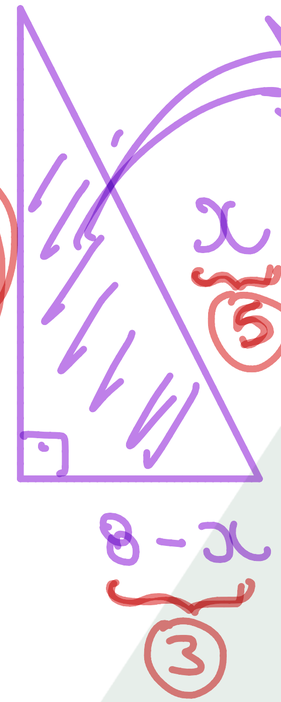
$\Rightarrow \alpha + \beta = 140°$

MESTRES DA MATEMÁTICA

Exemplo 5

- ABCD é um TRAPÉZIO RETÂNGULO
- $\overline{CA}$ é bissetriz de $\hat{C}$
- $\overline{AD} = 4cm$
- $\overline{CD} = 8cm$
- $2p_{\text{TRAPÉZIO RETÂNGULO}} = ?$





Perímetro

$(P; t.)$

$x^2 = 4^2 + (8-x)^2$

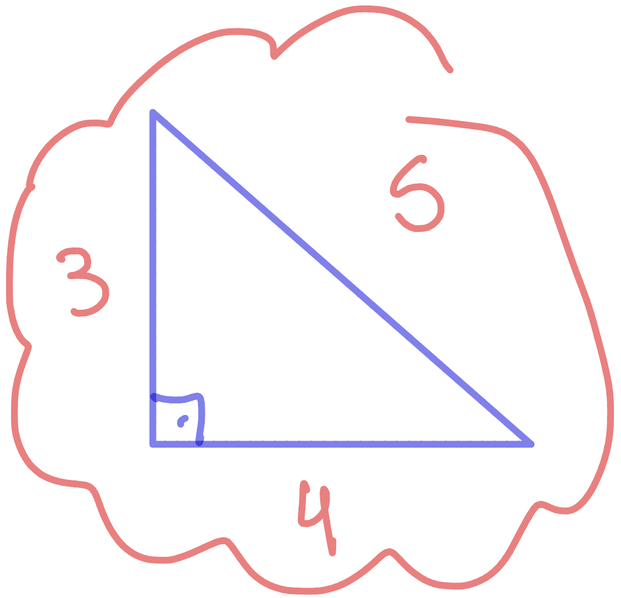
$x^2 = 16 + 64 - 16x + x^2$

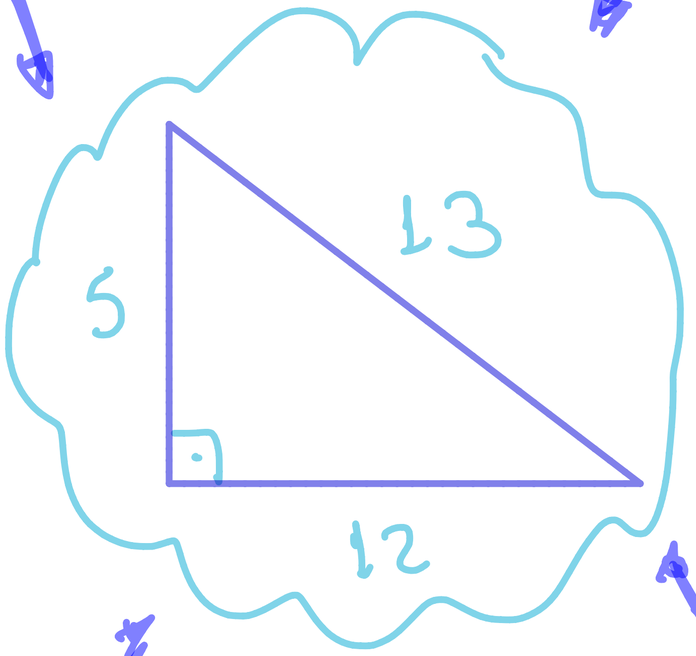
$16x = 80$

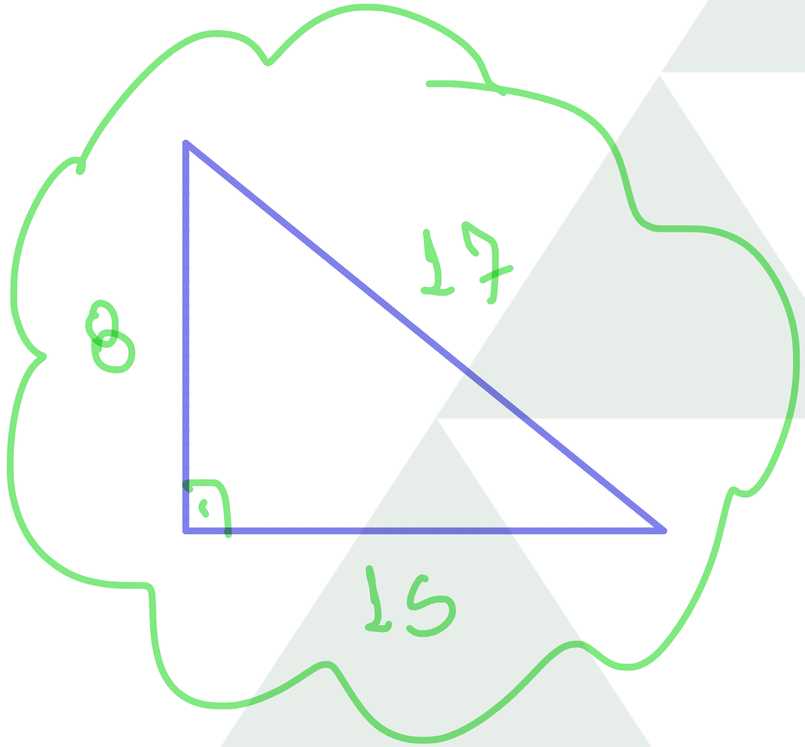
$x = 5$

$R: 2p = 4+5+5+8 = 22cm$ //

OBS: Triângulos Pitagóricos (Adicionados)





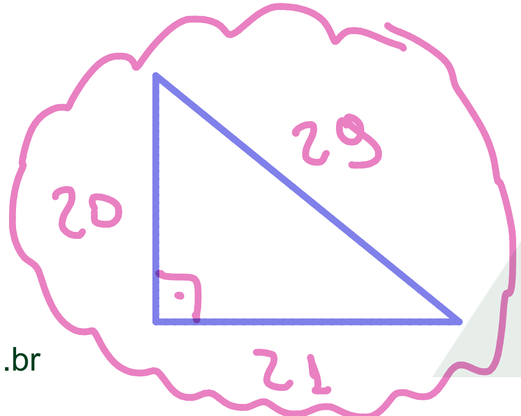


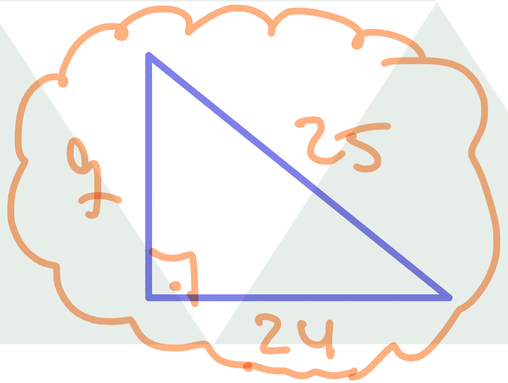
e seus múltiplos

6, 8 e 10

9, 12 e 15

12, 16 e 20 ...

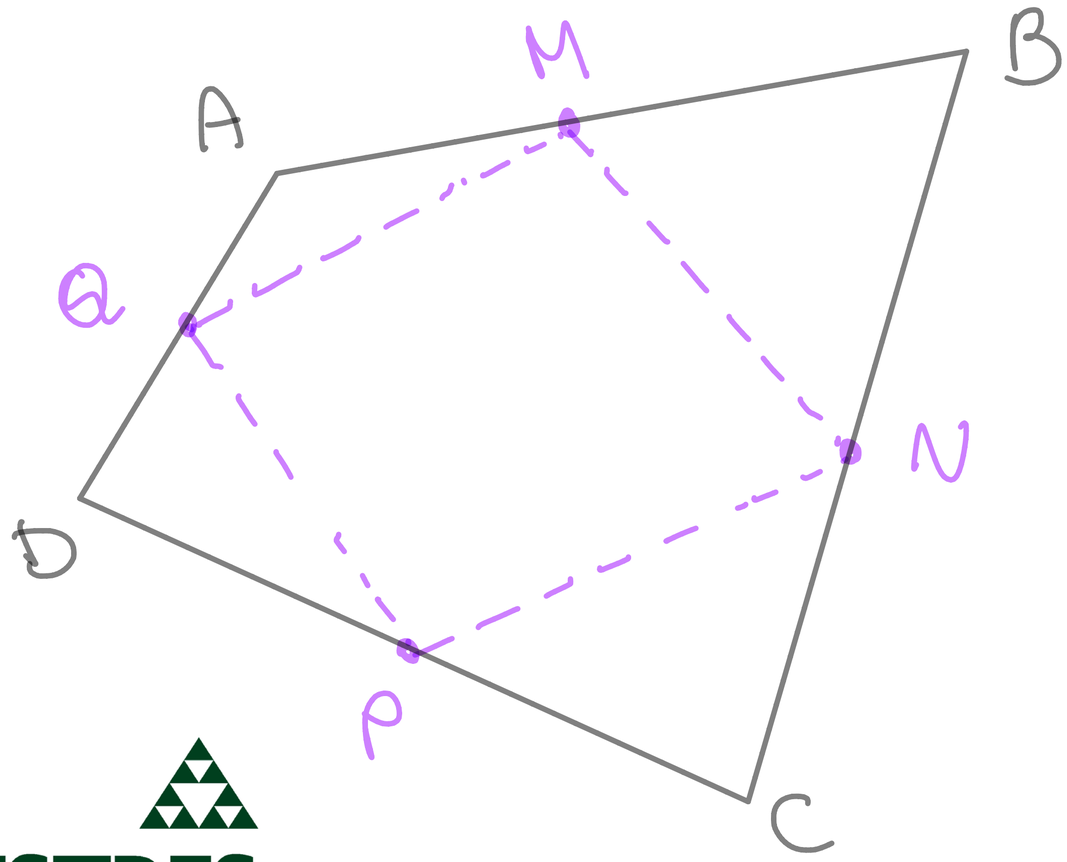




MESTRES DA MATEMÁTICA

Exemplo 6

- ABCD é um quadrilátero
- M, N, P e Q são pontos médios
- Diagonais $\overline{AC}$ e $\overline{BD}$ medem 10cm e 14cm
- $2p_{MNPQ} = ?$



Base média