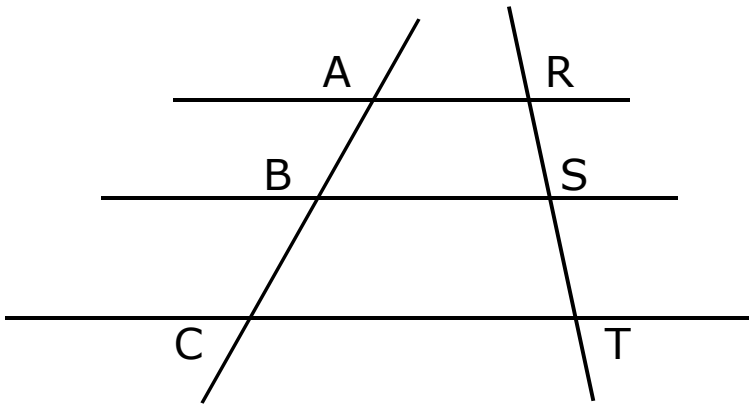
MATEMÁTICA
Aula 20

TÓPICOS

TEOREMA DE TALES
SEMELHANÇA DE TRIÂNGULOS
PITÁGORAS DE SAMOS

TEOREMA DE TALES

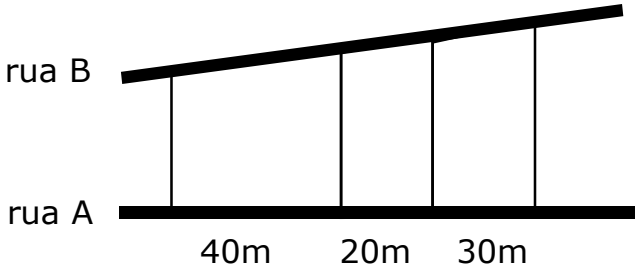


$$\frac{AB}{BC} = \frac{RS}{ST}$$

$$\frac{AB}{AC} = \frac{RS}{RT}$$

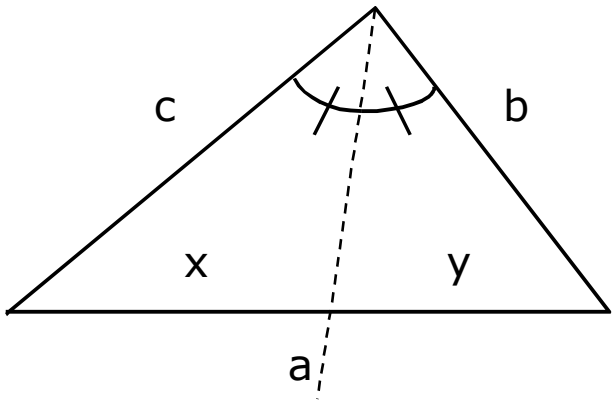
$$\frac{BC}{AC} = \frac{ST}{RT}$$

1) Três terrenos têm frente para a rua *A* e para a rua *B*, como na figura. As divisas laterais são perpendiculares à rua *A*. Qual a medida de frente para a rua *B* de cada lote, sabendo que a frente total para essa rua é 180m.

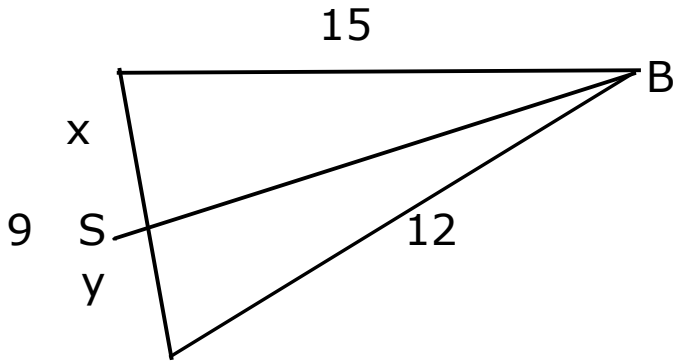


TEOREMA DA BISSETRIZ INTERNA

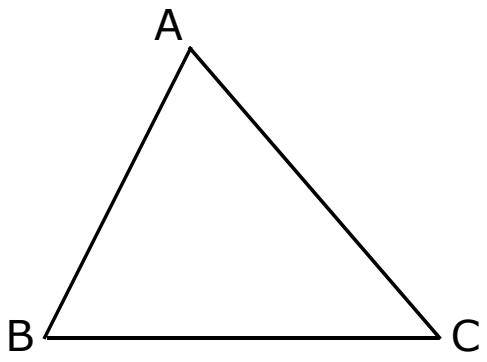
$$\frac{x}{c} = \frac{y}{b}$$

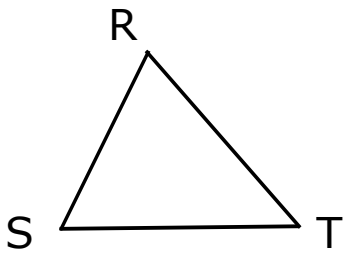


2) Na figura, calcule os valores de *x* e *y.* BS é bissetriz interna do ângulo B.

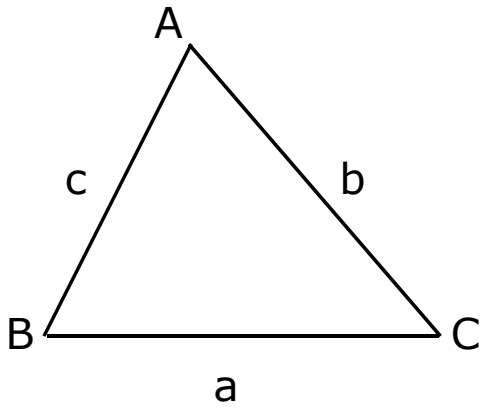


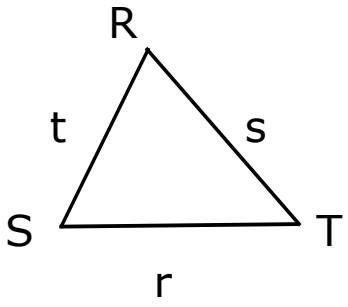
SEMELHANÇA DE TRIÂNGULOS





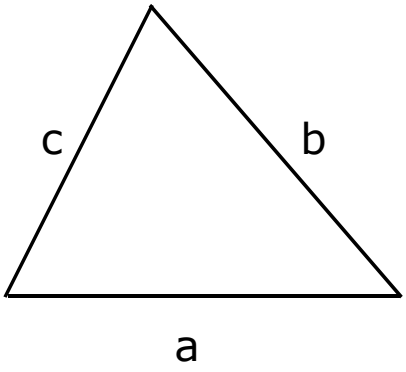
$$\hat{A} \equiv \hat{R} \quad \hat{B} \equiv \hat{S} \quad \hat{C} \equiv \hat{T}$$

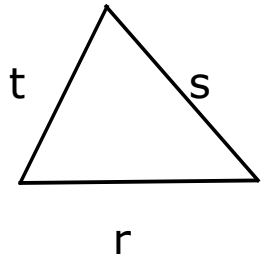




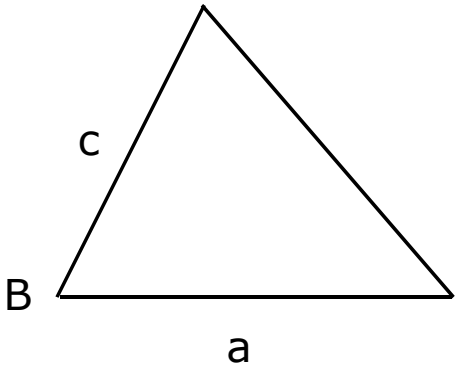
$$\frac{a}{r} = \frac{b}{s} = \frac{c}{t}$$

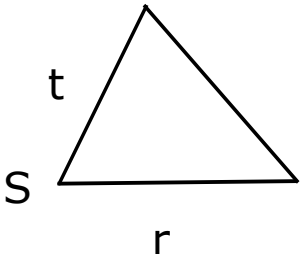
Critérios de semelhança



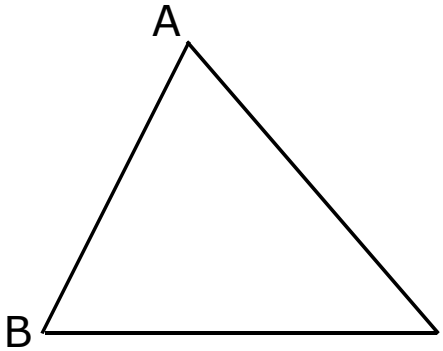


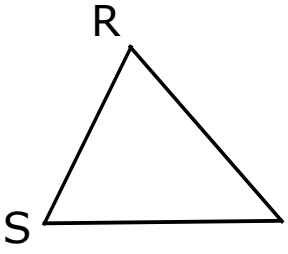
(LLL ~)





(LAL ~)



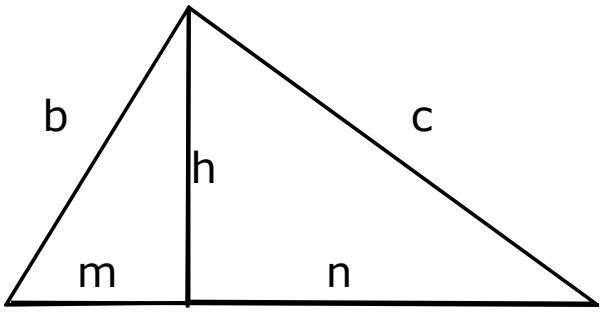


(AA ~)

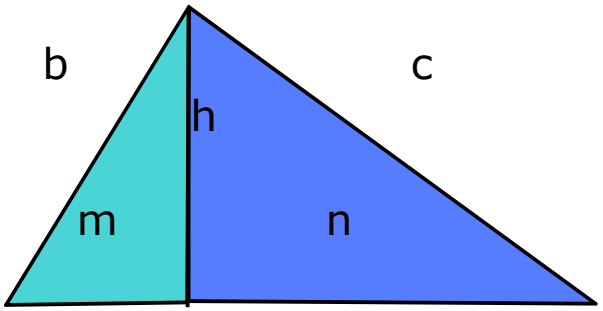
3) Um obelisco de 12m de altura projeta, num certo momento, uma sombra de 4,8m de extensão. Calcule a distância máxima que uma pessoa de 1,8m de altura poderá se afastar do centro da base do obelisco, ao longo da sombra, para, em pé, continuar totalmente na sombra.

PITÁGORAS DE SAMOS

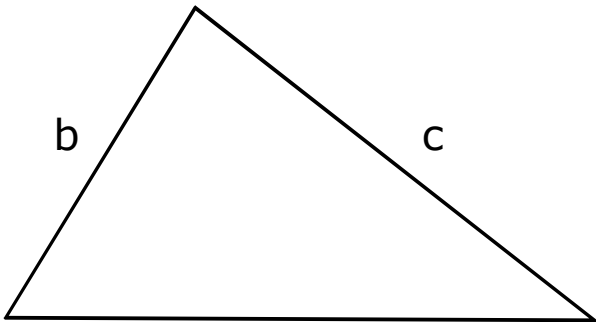
Demonstração do teorema



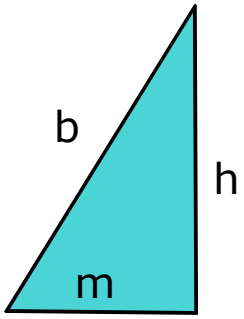
a



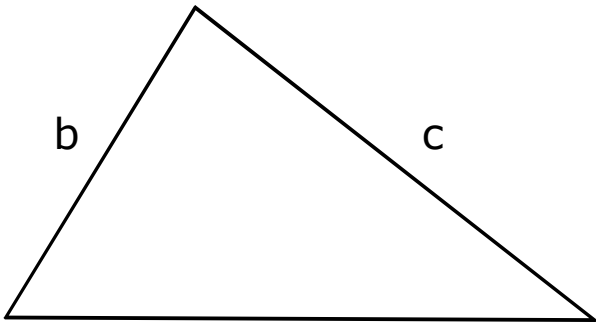
a

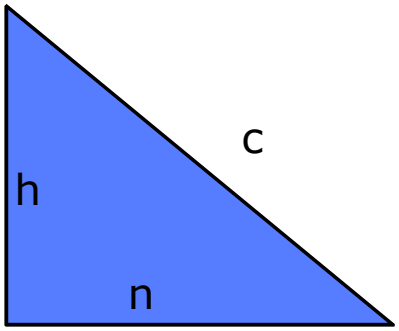


a

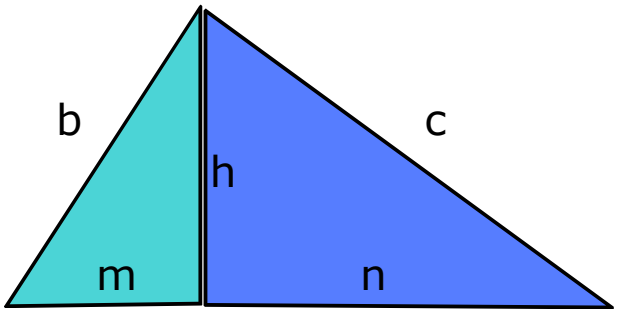


$$\frac{b}{a} = \frac{m}{b} \Rightarrow \boxed{b^2 = a.m}$$





$$\frac{c}{a} = \frac{n}{c} \Rightarrow \boxed{c^2 = a.n}$$



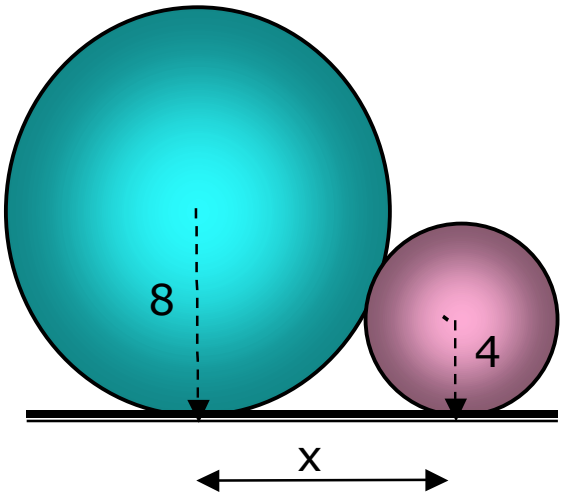
$$\begin{cases} b^2 = a.m \\ c^2 = a.n \end{cases}$$

$$b^2 + c^2 = a.m + a.n$$

$$b^2 + c^2 = a(m + n)$$

$$\boxed{b^2 + c^2 = a^2}$$

4) No jogo de bocha o objetivo é conseguir lançar uma bola de raio 8cm o mais próximo que conseguir de uma bola menor de raio 4cm. Se um jogador conseguiu fazer com que as bolas ficassem encostadas, qual à distância entre os pontos em que as bolas tocam o chão?



Respostas

1)x=90, y=50 e z=40m

2)x=5 e y=4

3)4,08m

4)$8\sqrt{2}$ m