

Triângulos Retângulos

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①

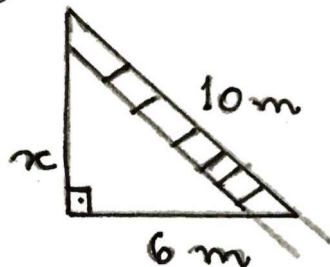
$$h^2 = (\sqrt{3})^2 + (\sqrt{4})^2$$

$$h^2 = 3 + 4$$

$$h^2 = 7$$

$$h = \sqrt{7}$$

②



$$10^2 = 6^2 + x^2$$

$$100 = 36 + x^2$$

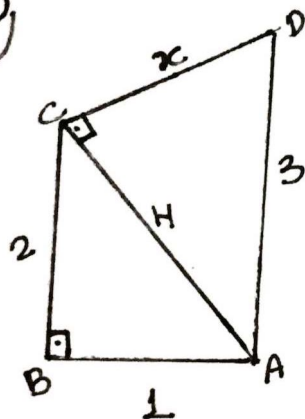
$$100 - 36 = x^2$$

$$64 = x^2$$

$$\sqrt{64} = x$$

$$x = 8m$$

③



$$\triangle ABC \Rightarrow H^2 = 2^2 + 1^2$$

$$H^2 = 4 + 1$$

$$H^2 = 5$$

$$H = \sqrt{5}$$

$$\triangle ACD \Rightarrow 3^2 = (\sqrt{5})^2 + CD^2$$

$$9 = 5 + CD^2$$

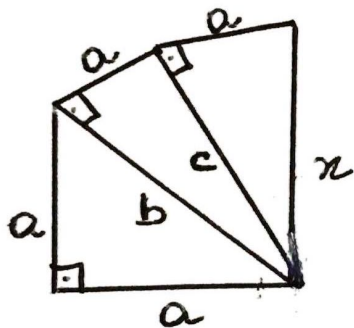
$$9 - 5 = CD^2$$

$$4 = CD^2$$

$$\sqrt{4} = CD$$

$$CD = 2$$

(4)



$$b^2 = a^2 + a^2$$

$$b^2 = 2a^2$$

$$c^2 = 2a^2 + a^2$$

$$c^2 = 3a^2$$

$$x^2 = 3a^2 + a^2$$

$$x^2 = 4a^2$$

$$x = \sqrt{4a^2}$$

$$x = 2a$$

⑤

$$6^2 = 2^2 + c^2$$

$$36 = 4 + c^2$$

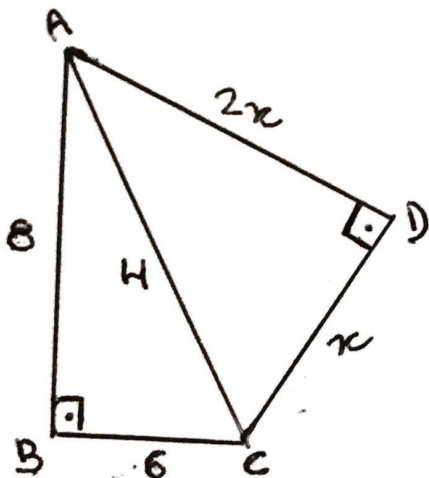
$$32 = c^2$$

$$\begin{array}{r|l} 32 & 2 \\ 16 & 2 \\ 8 & 2 \\ 4 & 2 \\ 2 & 2 \\ \hline 1 & 2 \cdot 2\sqrt{2} \\ & 4\sqrt{2} \end{array} \quad \begin{array}{l} \leq c = \sqrt{32} \\ c = 4\sqrt{2} \end{array}$$

$$A = \frac{b \cdot h}{2} \Rightarrow A = \frac{2 + 4\sqrt{2}}{2}$$

$$A = 4\sqrt{2}$$

⑥



$$\triangle ABC \Rightarrow H^2 = 8^2 + 6^2$$

$$H^2 = 64 + 36$$

$$H^2 = 100$$

$$H = \sqrt{100}$$

$$H = 10$$

$$\triangle ACD \Rightarrow 10^2 = x^2 + 2x^2$$

$$100 = x^2 + 4x^2$$

$$100 = 5x^2$$

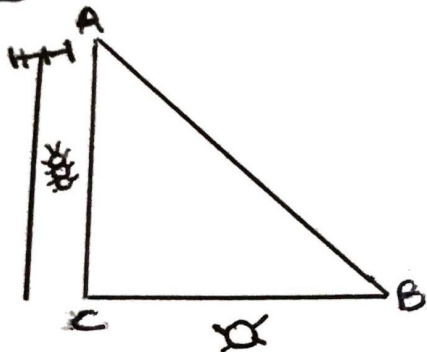
$$x^2 = \frac{100}{5} \Rightarrow x = \sqrt{20}$$

$$x = 2\sqrt{5}$$

$$\begin{array}{r} 20 \overline{) 2} \\ 10 \overline{) 2} \\ 5 \overline{) 5} \\ 1 \overline{) 2\sqrt{5}} \end{array}$$

↑

7



$$\text{Aronha} = 5 \times 16 \text{ cm} = 80 \text{ cm} = 0,8 \text{ m}$$

$$2,00 - 0,80 = 1,20 \text{ m distante do poste}$$

$$\text{Formiga} = 5 \times 10 \text{ cm} = 50 \text{ cm} = 0,5 \text{ m}$$

↳ subida

AB = distância entre a formiga e aranha

$$AB^2 = AC^2 + BC^2$$

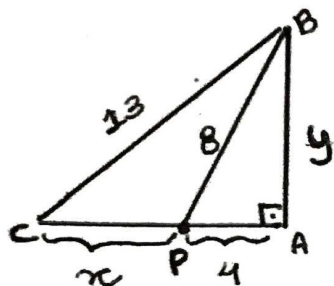
$$AB^2 = 0,50^2 + 1,20^2$$

$$AB^2 = 0,25 + 1,44$$

$$AB = \sqrt{1,69}$$

$$AB = 1,30 \text{ m}$$

8



$$x = 7$$

$$\Delta ABC = 13^2 = (4+x)^2 + (4\sqrt{3})^2$$

$$169 = 16 + 8x + x^2 + 16 \cdot 3$$

$$169 = x^2 + 8x + 16 + 48$$

$$x^2 + 8x + 64 = 169$$

$$x^2 + 8x + 64 - 169 = 0$$

$$\Delta = 64 - 4 \cdot 1 \cdot (-105) \leq x^2 + 8x - 105 = 0$$

$$\Delta = 64 + 420$$

$$\Delta = 484$$

$$x = \frac{-8 \pm \sqrt{484}}{2}$$

$$x = 7$$

medida de lado é positivo

$$\Delta ABP \Rightarrow 8^2 = 4^2 + y^2$$

$$64 = 16 + y^2$$

$$64 - 16 = y^2$$

$$y^2 = 48$$

$$y = \sqrt{48}$$

$$y = 4\sqrt{3}$$

$$\begin{array}{r|l} 48 & 2 > 2 \\ \hline 24 & 2 \\ \hline 12 & 2 > 2 \\ \hline 6 & 2 \\ \hline 3 & 3 \\ \hline 1 & 2 \cdot 2 \sqrt{3} \\ & 4\sqrt{3} \end{array}$$

⑨

$$a = 14$$

$$b = 15$$

$$c = 13$$

$$h = ?$$

}

$$ah = bc$$

$$14h = 15 \cdot 13$$

$$14h = 195$$

$$h = \frac{195}{14}$$

$$h = 13$$

10

$$x^2 = (r+r')^2 - (r-r')^2$$

$$x^2 = (r^2 + 2rr' + r'^2) - (r^2 - 2rr' + r'^2)$$

$$x^2 = 4rr' \Rightarrow x = \sqrt{4rr'}$$

$$x = 2\sqrt{rr'}$$

11

$$\Delta ABC \Rightarrow (AC)^2 = (BC)^2 + (AB)^2$$

$$AC^2 = 40^2 + 30^2$$

$$AC^2 = 1600 + 900$$

$$AC^2 = 2500$$

$$AC = \sqrt{2500}$$

$$AC = 50$$

↳ Hipotenusa ΔABC

$$C^2 = a \cdot n$$

$$AC = a = 50$$

$$CD = c = 20$$

$$CE = n$$

$$\left. \begin{array}{l} AC = a = 50 \\ CD = c = 20 \end{array} \right\} \begin{array}{l} 20^2 = 50n \\ 50n = 400 \end{array}$$

$$50n = 400$$

$$n = \frac{400}{50} \Rightarrow n = 8$$

$$CE = 8$$