

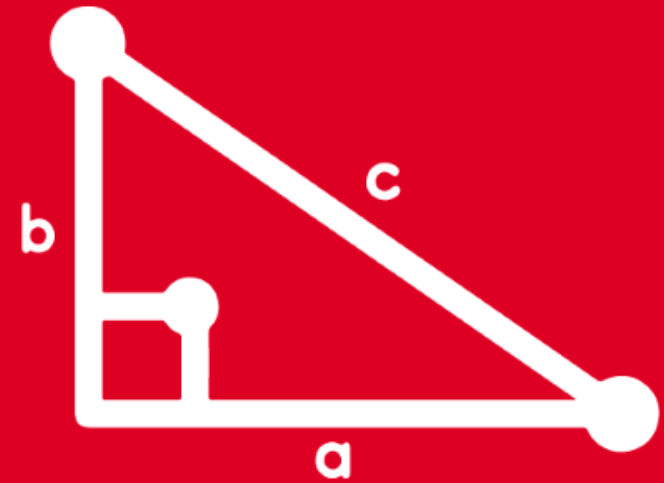
# TRIGONOMETRY

## VOLUME III

**1st**

SECONDARY

**FEEDBACK**

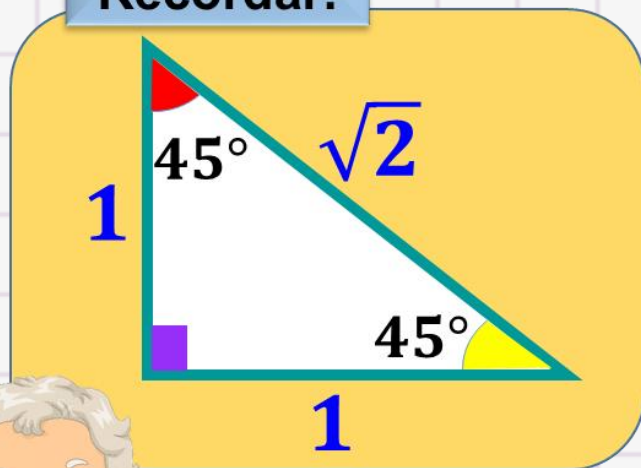


# 1) Efectúe

$$A = (5 \cos 45^\circ + 6 \operatorname{sen} 45^\circ) \sec 45^\circ$$

## RESOLUCIÓN

Recordar:



$$A = \left[ 5 \times \left( \frac{1}{\sqrt{2}} \right) + 6 \times \left( \frac{1}{\sqrt{2}} \right) \right] \times (\sqrt{2})$$

$$A = \left[ \frac{11}{\cancel{\sqrt{2}}} \right] \times (\cancel{\sqrt{2}})$$

$$\therefore A = 11$$

2) Efectúe si

$$G = (6 \cot 45^\circ)^{\csc 30^\circ} + (12\sqrt{3} \tan 60^\circ)^{\sec 30^\circ}$$

**RESOLUCIÓN**

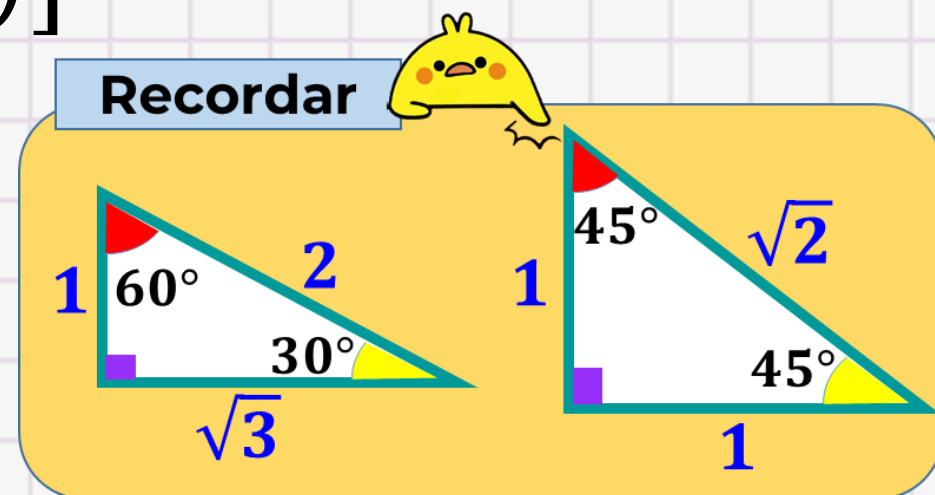
$$G = [6 \times (1)]^2 + [12\sqrt{3} \times (\sqrt{3})]^{\frac{1}{2}}$$

$$G = 36 + [36]^{\frac{1}{2}}$$

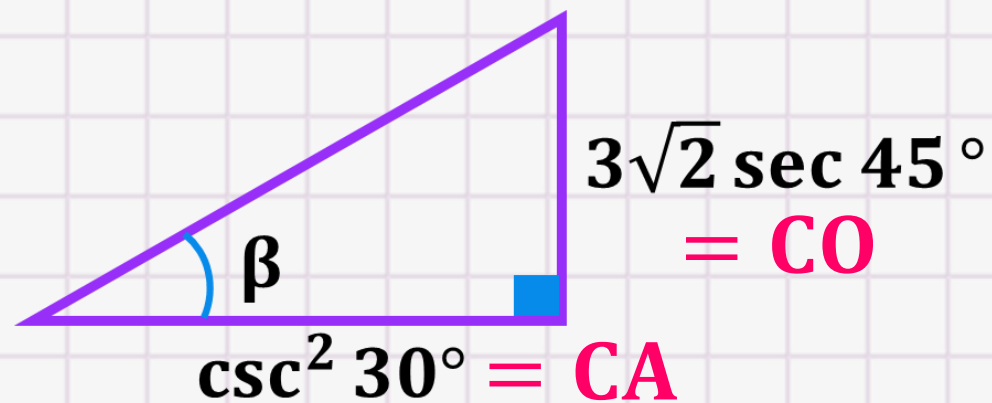
$$G = 36 + \sqrt{36}$$

$$G = 36 + 6$$

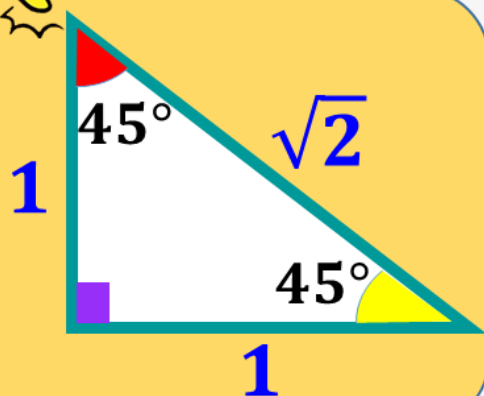
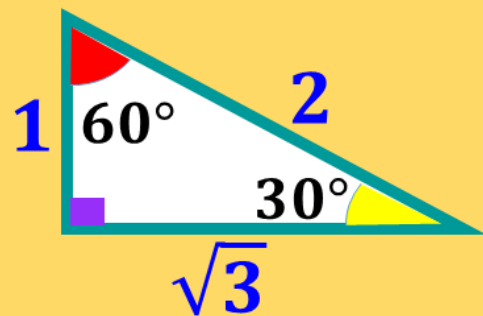
$$\therefore G = 42$$



3) Del gráfico, calcule  $\tan \beta$ .



Recordar



RESOLUCIÓN

$$\rightarrow \tan \beta = \frac{CO}{CA}$$

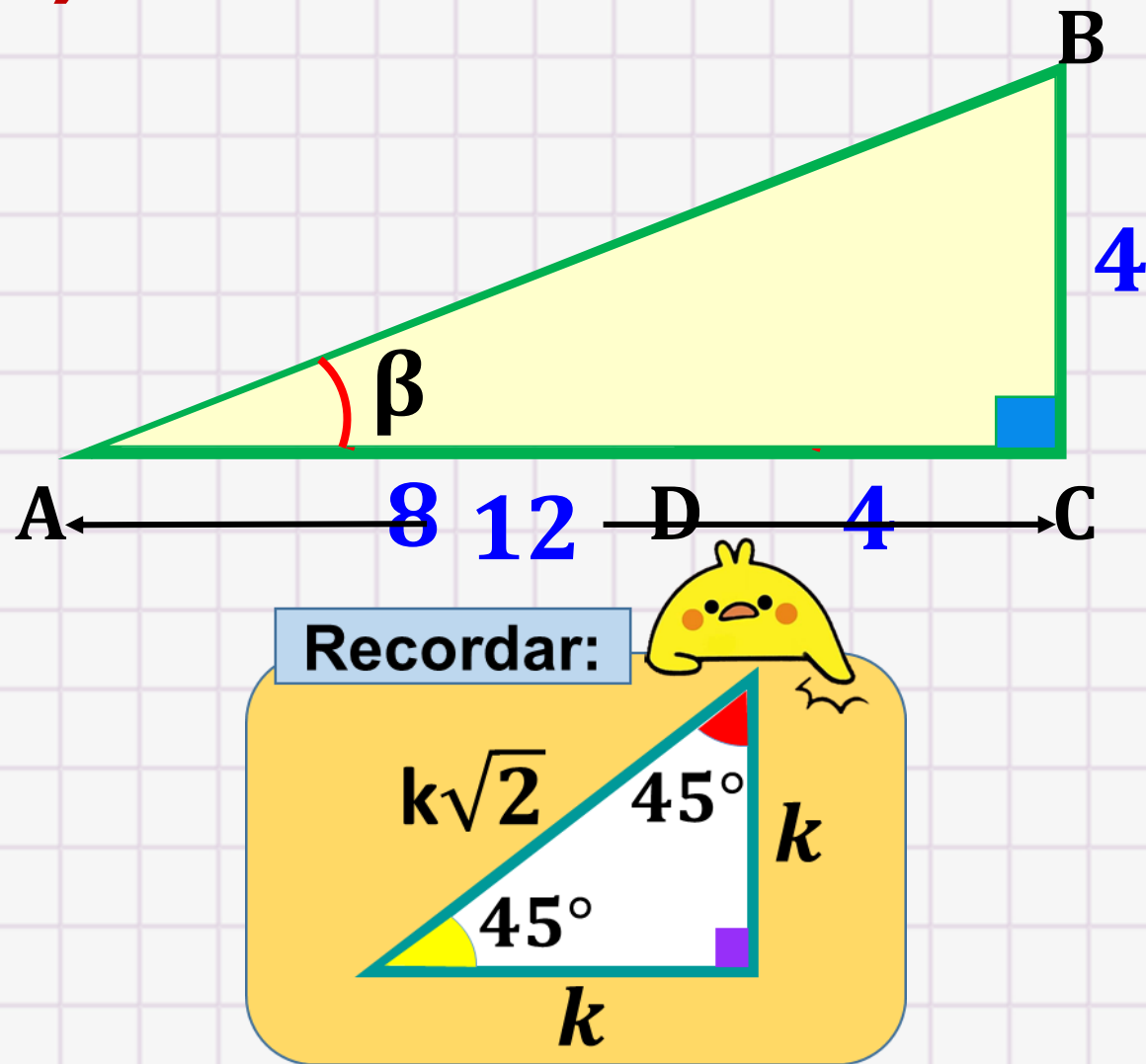
$$\tan \beta = \frac{3\sqrt{2} \sec 45^\circ}{\csc^2 30^\circ}$$

$$\tan \beta = \frac{3\sqrt{2} \times (\sqrt{2})}{(2)^2}$$

$$\tan \beta = \frac{\cancel{6}^3}{\cancel{4}^2}$$

$$\therefore \tan \beta = \frac{3}{2}$$

4) Del gráfico, calcule  $\tan \beta$ .



## RESOLUCIÓN

El  $\triangle BCD$  es notable de  $45^\circ$  y  $45^\circ$

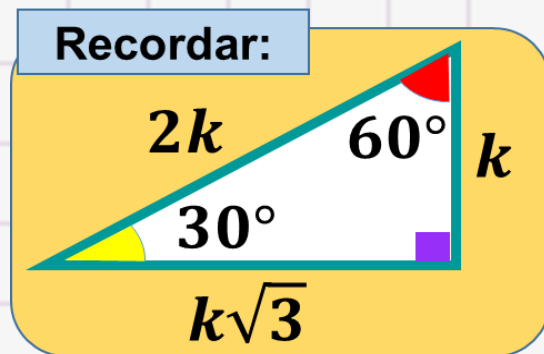
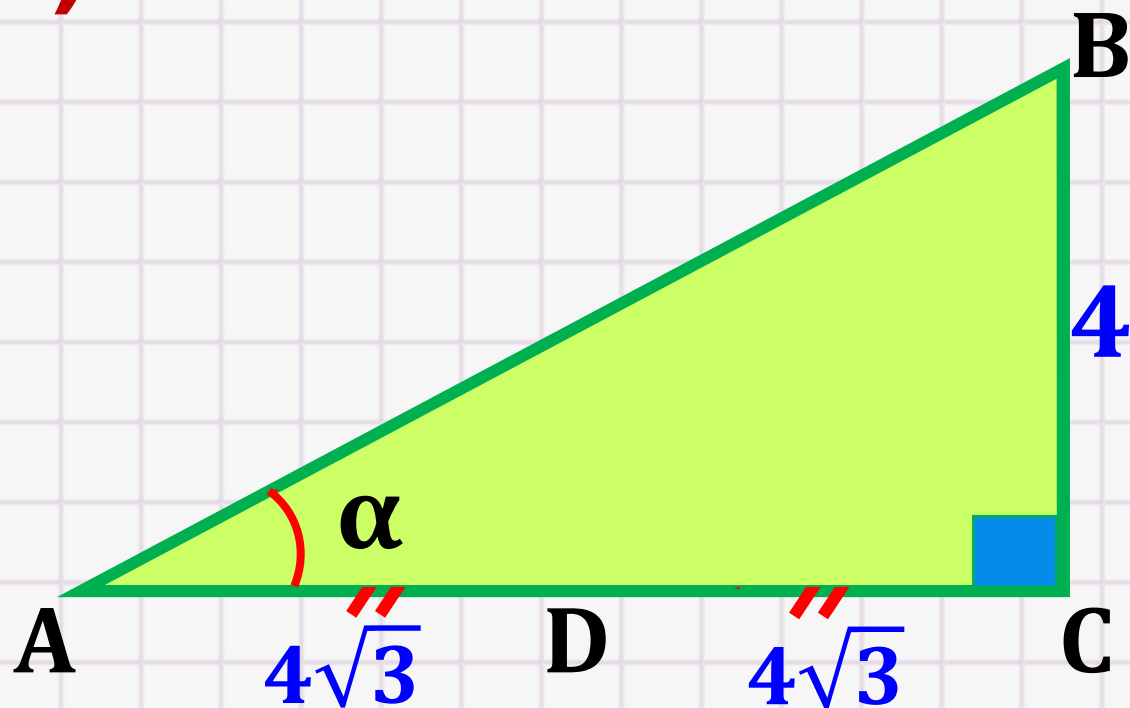
Se observa:  $DC = 4$  y  $BC = 4$

Calculamos:  $\tan \beta = \frac{CO}{CA} = \frac{4^1}{12^3}$

$\therefore$

$$\tan \beta = \frac{1}{3}$$

5) Del gráfico, calcule  $\cot \alpha$ .



## RESOLUCIÓN

El  $\triangle BCD$  es notable de  $30^\circ - 60^\circ$

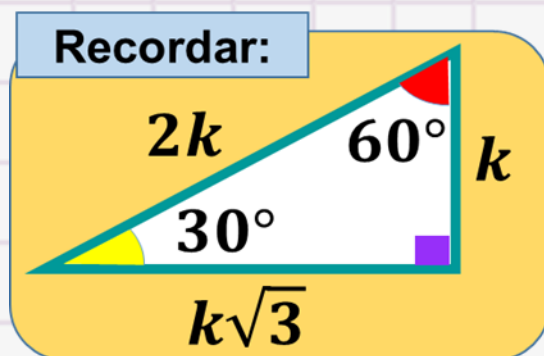
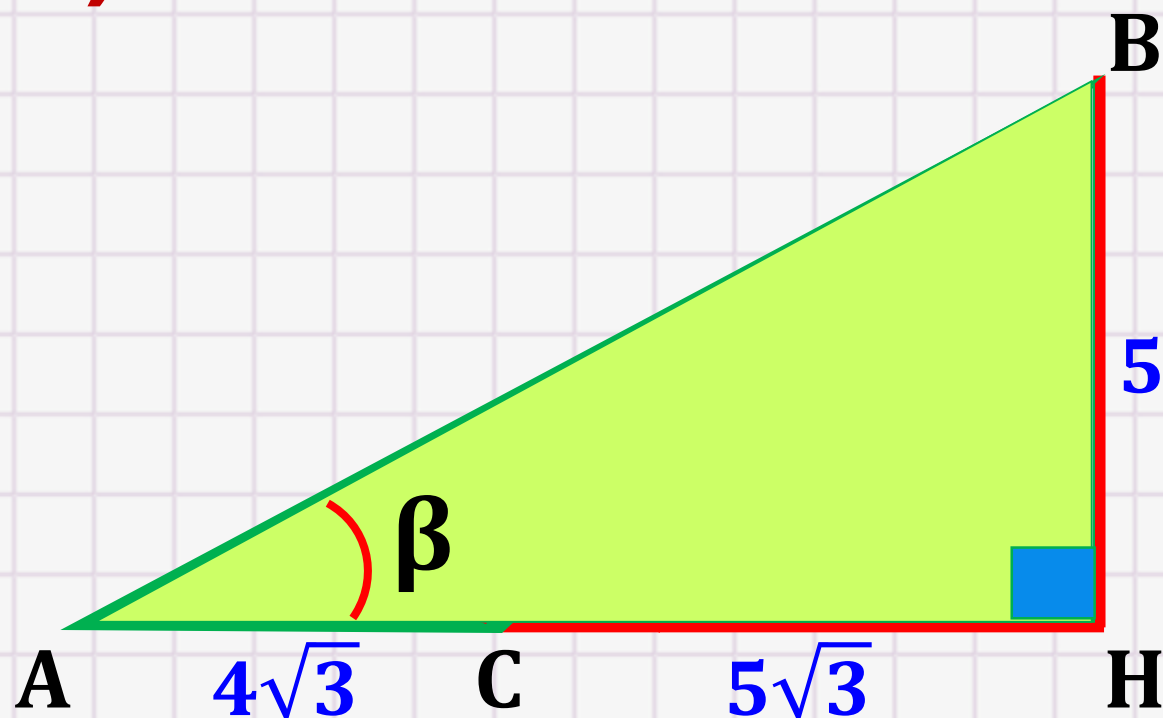
$$BC = 4 \rightarrow k = 4$$

Luego:  $DC = 4\sqrt{3}$

Calculamos:  $\cot \alpha = \frac{CA}{CO} = \frac{\cancel{8}^2\sqrt{3}}{\cancel{4}_1} = 2\sqrt{3}$

$\therefore \cot \alpha = 2\sqrt{3}$

6) Del gráfico, calcule  $\cot \beta$ .



## RESOLUCIÓN

El  $\triangle BHC$  es notable de  $30^\circ - 60^\circ$

Se observa:  $BC = 10 \rightarrow 2k = 10$

$$\rightarrow k = 5$$

Luego:  $BH = 1(5) = 5$

$$CH = (5)\sqrt{3} = 5\sqrt{3}$$

$$\text{Calculamos: } \cot \beta = \frac{CA}{CO} = \frac{4\sqrt{3} + 5\sqrt{3}}{5}$$

$$\therefore \cot \beta = \frac{9\sqrt{3}}{5}$$

7) Efectúe  $\frac{b}{a}$  si

$$\operatorname{sen} 24^\circ \cdot \operatorname{csc} a = 1$$

$$\tan 36^\circ \cdot \cot b = 1$$

## RESOLUCIÓN

Del dato:  $\operatorname{sen} 24^\circ \cdot \operatorname{csc} a = 1$

Por RT recíprocas:  $a = 24^\circ$

$$\tan 36^\circ \cdot \cot b = 1$$

Por RT recíprocas:  $b = 36^\circ$

Efectuamos:  $E = \frac{b}{a}$

$$E = \frac{\cancel{3} 6^\circ}{\cancel{2} 4^\circ}$$

$\therefore$

$$E = \frac{3}{2}$$



8) Calcule el valor de  $x$  si  
 $\tan 8x \cdot \cot(2x + 66^\circ) = 1$

### RESOLUCIÓN

Del dato:

$$\tan 8x \cdot \cot(2x + 66^\circ) = 1$$

Por RT recíprocas:  $8x = 2x + 66^\circ$

$$6x = 66^\circ$$

$$\therefore x = 11^\circ$$

**9) Si  $\text{sen } 12x \cdot \text{csc}(4x + 40^\circ) - 1 = 0$ , efectúe**

$$P = \text{sen } 6x \cdot \text{csc}(8x - 10^\circ)$$

## RESOLUCIÓN

Del dato:

$$\text{sen } 12x \cdot \text{csc}(4x + 40^\circ) - 1 = 0$$

$$\text{sen } 12x \cdot \text{csc}(4x + 40^\circ) = 1$$

Por RT recíprocas:

$$12x = 4x + 40^\circ$$

$$8x = 40^\circ$$

$$x = 5^\circ$$

Efectuamos

$$P = \text{sen } 6x \cdot \text{csc}(8x - 10^\circ)$$

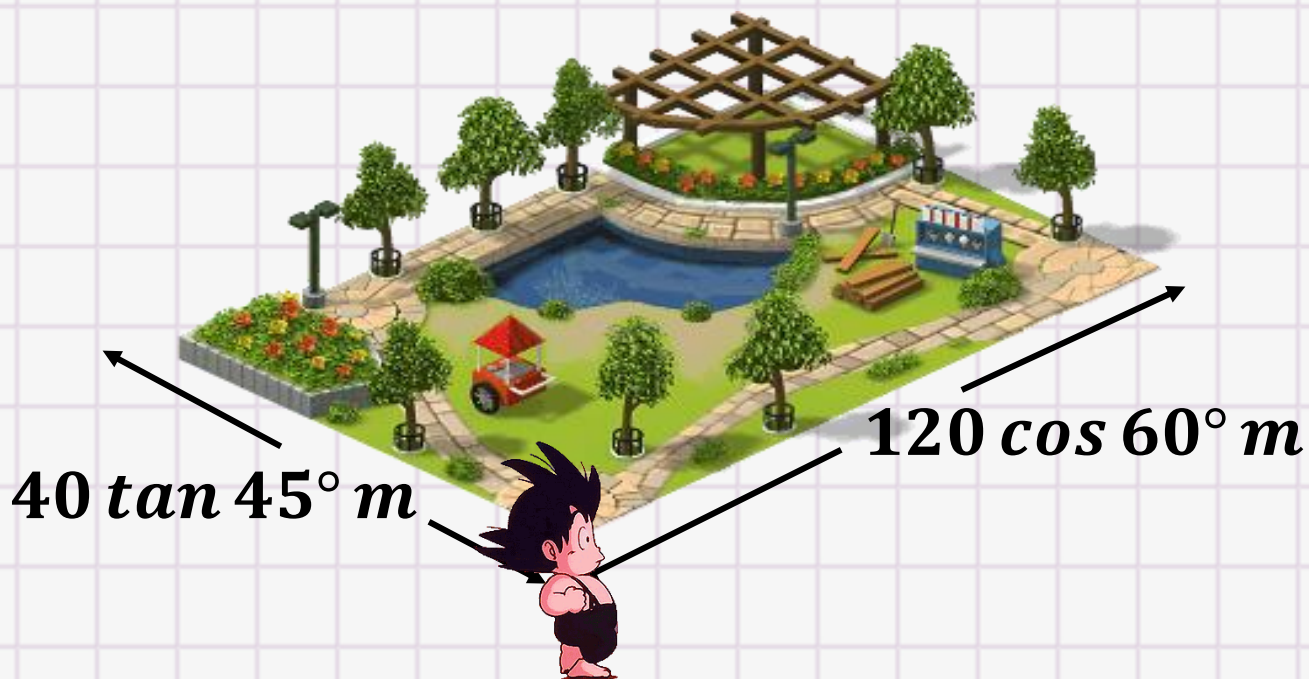
$$P = \text{sen } 6(5^\circ) \cdot \text{csc}(8(5^\circ) - 10^\circ)$$

$$P = \text{sen } 30^\circ \cdot \text{csc } 30^\circ$$

$\therefore$

$$P = 1$$

**10)** Rodrigo es un niño al que le gusta cuidar su salud, diariamente sale a correr 50 min alrededor de un parque rectangular que está cerca a su casa (ver figura). Determine cuántos metros recorre en 3 vueltas al parque.



## RESOLUCIÓN

$$40 \tan 45^\circ m = 40 \times 1$$

$$\Rightarrow 40 \tan 45^\circ = 40 m$$

$$120 \cos 60^\circ m = \cancel{120}^{\cancel{60}} \times \left( \frac{1}{\cancel{2}}^{\cancel{1}} \right)$$

$$\Rightarrow 120 \cos 60^\circ = 60 m$$

En una vuelta (1V) recorrerá:

$$1V = 40 m + 60 m + 40 m + 60 m$$

$$1V = 200 m$$

• • En 3 vueltas al parque Rodrigo recorrerá 600 m.



**SACO**  
**OLIVEROS**