

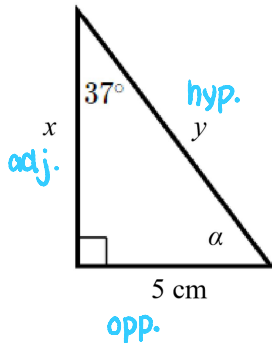
2.4 Solving Right Triangles

FMP 10 2.4

Trigonometry: Solving Right Triangles

Name: _____

Using trigonometric ratios, solve each triangle. (Determine each unknown side length and angle.)



$$\tan 37^\circ = \frac{5}{x}$$

$$x = \frac{5}{\tan 37^\circ}$$

$$x \doteq 6.6 \text{ cm}$$

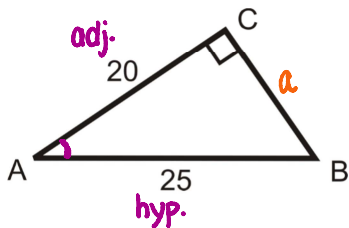
$$\sin 37^\circ = \frac{5}{y}$$

$$y = \frac{5}{\sin 37^\circ}$$

$$y \doteq 8.3 \text{ cm}$$

$$\alpha = 180 - 90 - 37$$

$$\alpha = 53^\circ$$



$$\cos A = \frac{20}{25}$$

$$\angle A = \cos^{-1}\left(\frac{20}{25}\right)$$

↑
angle symbol

$$\angle A = 37^\circ$$

$$a^2 + 20^2 = 25^2$$

$$a^2 + 400 = 625$$

$$-400 \quad -400$$

$$a^2 = 225$$

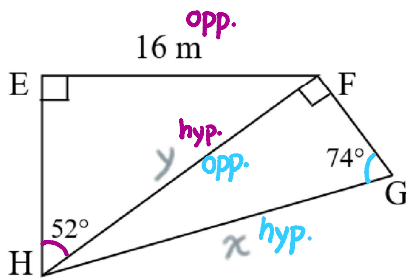
$$a = \sqrt{225}$$

$$a = 15$$

$$\angle B = 180 - 90 - 37$$

$$\angle B = 53^\circ$$

Calculate the length of GH, to the nearest tenth of a meter.



① Calculate length of y .

$$\sin 52^\circ = \frac{16}{y}$$

$$y = \frac{16}{\sin 52^\circ} \approx 20.3043 \text{ m}$$

(Keep a few extra decimal places)

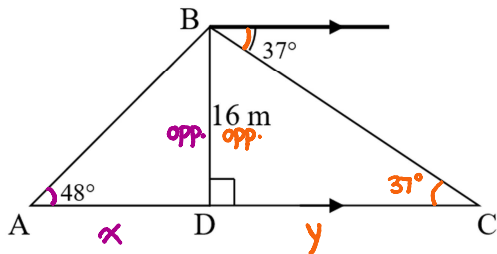
$$\textcircled{2} \sin 74^\circ = \frac{20.3043}{x}$$

$$x = \frac{20.3043}{\sin 74^\circ}$$

$$x \approx 21.1 \text{ m}$$

$$GH = 21.1 \text{ m}$$

Calculate the length of AC, to the nearest tenth of a meter.



$$\tan 48^\circ = \frac{16}{x}$$

$$x = \frac{16}{\tan 48^\circ}$$

$$x \approx 14.4 \text{ m}$$

$$\tan 37^\circ = \frac{16}{y}$$

$$y = \frac{16}{\tan 37^\circ}$$

$$y \approx 21.2 \text{ m}$$

$$AC = x + y$$

$$= 14.4 + 21.2$$

$$AC = 35.6 \text{ m}$$