The Weekly Rigor

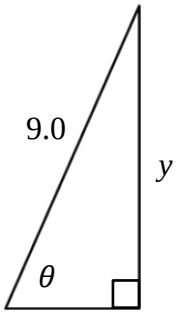
No. 243 "A mathematician is a machine for turning coffee into theorems." February 16, 2019

8 Problems in Solving Right Triangles (Part 2 of 4)

(Part 2)

SELECTED SOLUTIONS

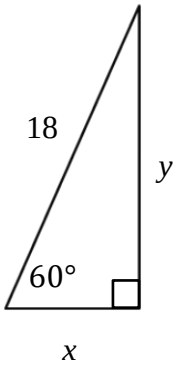
1.



(a) $\cos(\theta) = \frac{1.5}{9.0} \implies \theta = \cos^{-1}\left(\frac{1.5}{9.0}\right) = 80°.$

(b) $1.5^2 + y^2 = 9.0^2 \implies y^2 = 9.0^2 - 1.5^2 = 78.75 \implies y = 8.9$ m.

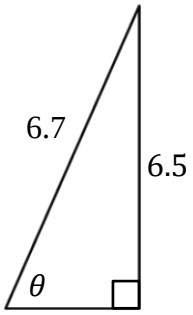
3.



(a) $\sin(60°) = \frac{y}{18} \implies 18\sin(60°) = y \implies y = 15.59$ ft.

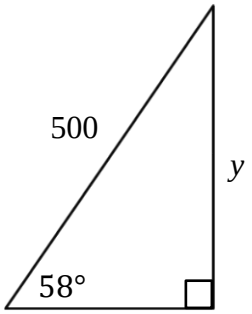
(b) $\cos(60°) = \frac{x}{18} \implies 18\cos(60°) = x \implies x = 9.00$ ft.

5.



$\sin(\theta) = \frac{6.5}{6.7} \quad \Longrightarrow \quad \theta = \sin^{-1}\left(\frac{6.5}{6.7}\right) = 75.97°.$

7.



$\sin(58°) = \frac{y}{500} \quad \Longrightarrow \quad 500\sin(58°) = y \quad \Longrightarrow \quad y = 424 \text{ ft.}$