

pg. 525 - 526 Even Solutions

$$8. \quad 180 - 63 - 71 = 46 \quad \frac{a}{\sin A} = \frac{b}{\sin B} \quad \frac{18}{\sin 63} = \frac{x}{\sin 71} \quad \frac{18}{\sin 63} = \frac{y}{\sin 46}$$

$$\text{Cross Multiply:} \quad 18 \sin 71 = x \sin 63 \quad 18 \sin 46 = y \sin 63$$

$$17.02 = x \cdot .89 \quad 12.95 = y \cdot .89$$

$$\text{Division:} \quad 19.1 = x \quad 14.6 = y$$

$$12. \quad \frac{a}{\sin A} = \frac{b}{\sin B} \quad \frac{h}{\sin 48} = \frac{12}{\sin 42}$$

$$\text{Cross Multiply:} \quad h \sin 42 = 12 \sin 48$$

$$h \cdot .669 = 8.92$$

$$\text{Division:} \quad h = 13.3 \text{ feet}$$

14. Find the 3rd angle, then use the Law of Sines.

$$180 - 63 - 62 = 55 \text{ for the third angle}$$

$$\frac{a}{\sin A} = \frac{b}{\sin B} \quad \frac{BM}{\sin 63} = \frac{960}{\sin 55}$$

$$\text{Cross Multiply:} \quad BM \sin 55 = 960 \sin 63$$

$$BM \cdot .82 = 855.37$$

$$\text{Division:} \quad BM = 1,043 \text{ mi.}$$

16. First find a missing angle

$$\frac{a}{\sin A} = \frac{b}{\sin B} \quad \frac{250}{\sin 50} = \frac{60}{\sin A}$$

Cross Multiply: $250 \sin A = 60 \sin 50$

Division: $\sin A = 45.96/250$ $\sin A = .18385$ mi.

Inverse: $\sin^{-1}(\sin A) = \sin^{-1}(.18385)$ $m\angle A = 10.6^\circ$

$180 - 50 - 10.6 = 119.4$ for the third angle

$$\frac{a}{\sin A} = \frac{b}{\sin B} \quad \frac{x}{\sin 119.4} = \frac{250}{\sin 50}$$

Cross Multiply: $x \sin 50 = 250 \sin 119.4$

$$x * 0.766 = 217.8$$

Division: $x = 284.3$ ft.

20. $180 - 74 - 43 = 63$ for the third angle

$$\frac{a}{\sin A} = \frac{b}{\sin B} \quad \frac{y}{\sin 63} = \frac{5}{\sin 43}$$

Cross Multiply: $y \sin 43 = 5 \sin 63$

$$y * .682 = 4.455$$

Division: $y = 6.53$ in.