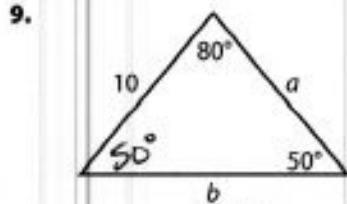


Law of Sines

Find all the unknown measurements using the Law of Sines.

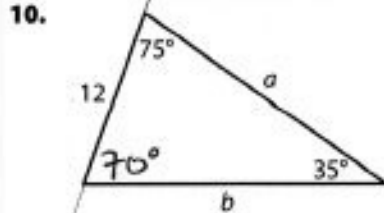


$$\frac{\sin 50^\circ}{10} = \frac{\sin 80^\circ}{b}$$

$$b = 12.9$$

$$a = 10$$

$$\angle A = 50^\circ$$



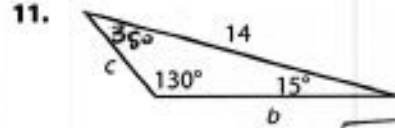
$$\frac{\sin 35^\circ}{12} = \frac{\sin 75^\circ}{b}$$

$$b = 20.2$$

$$m\angle A = 70^\circ$$

$$\frac{\sin 70^\circ}{a} = \frac{\sin 35^\circ}{12}$$

$$a = 19.7$$



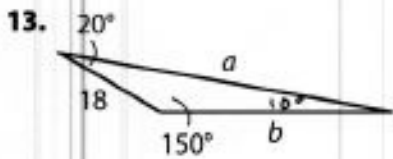
$$m\angle B = 35^\circ$$

$$\frac{\sin 130^\circ}{14} = \frac{\sin 15^\circ}{c}$$

$$c = 4.7$$

$$\frac{\sin 130^\circ}{14} = \frac{\sin 35^\circ}{b}$$

$$b = 10.5$$



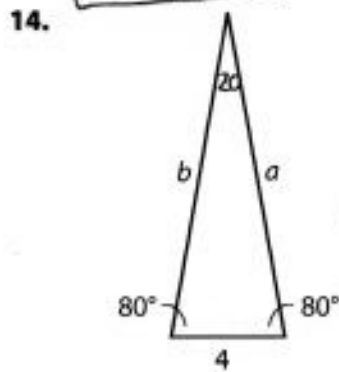
$$m\angle C = 10^\circ$$

$$\frac{\sin 10^\circ}{18} = \frac{\sin 20^\circ}{b}$$

$$b = 35.5$$

$$\frac{\sin 10^\circ}{18} = \frac{\sin 150^\circ}{a}$$

$$a = 51.8$$



$$m\angle C = 20^\circ$$

$$\frac{\sin 20^\circ}{4} = \frac{\sin 80^\circ}{a}$$

$$a = 11.5$$

$$b = 11.5$$

19. **Space Travel** Two radio towers that are 50 miles apart track a satellite in orbit. The first tower's signal makes a 76° angle between the ground and satellite. The second tower forms an 80.5° angle.

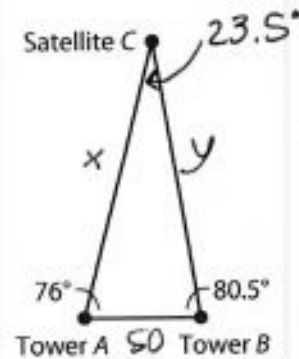
a. How far is the satellite from each tower?

$$\frac{\sin 23.5^\circ}{50} = \frac{\sin 80^\circ}{x}$$

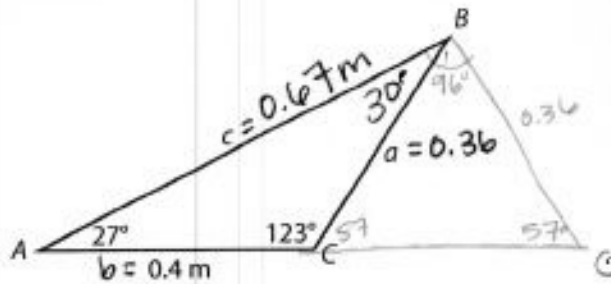
$$x = \boxed{123.5 \text{ miles}}$$

$$\frac{\sin 23.5^\circ}{50} = \frac{\sin 76^\circ}{y}$$

$$y = \boxed{121.7 \text{ miles}}$$



*20. **Biology** The dorsal fin of a shark forms an obtuse triangle with these measurements. Find the missing measurements and determine if another triangle can be formed.



$$\frac{\sin 123^\circ}{c} = \frac{\sin 30^\circ}{0.4} = \frac{\sin 27^\circ}{a}$$

$$\boxed{c = 0.67}$$

$$\boxed{a = 0.36}$$

$$\boxed{m \angle B = 30^\circ}$$

$$\frac{\sin 27^\circ}{0.36} = \frac{\sin 96^\circ}{b}$$

$$\boxed{m \angle B = 96^\circ}$$

$$\boxed{b = .79}$$

$$\boxed{m \angle C = 57^\circ}$$

Review:

Find the exact values. List ALL possible solutions.

1. $\tan\left(\frac{\pi}{2}\right) = \text{undefined}$

2. $\sin^{-1}\left(\cos\frac{\pi}{2}\right) =$
 $\sin^{-1}(0) = 0^\circ, 360^\circ$

3. $\tan^{-1}\frac{-\sqrt{3}}{3} = 150^\circ, 330^\circ$
 $\frac{5\pi}{6}, \frac{11\pi}{6}$