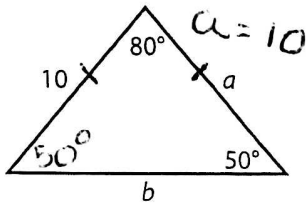
Secondary Math III
HW 11-2

Name Select Answers

Law of Sines

Find all the unknown measurements using the Law of Sines.

9.



$a = 10$

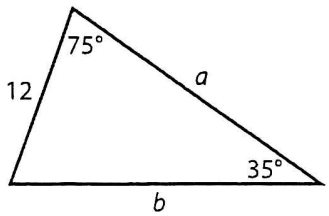
$$\frac{\sin 50^\circ}{10} = \frac{\sin 80^\circ}{b}$$

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

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

$$\boxed{b \approx 12.9}$$

10.



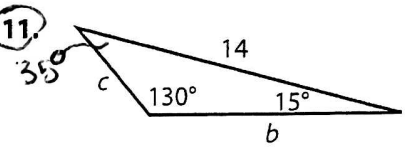
$$\frac{b}{\sin 35^\circ} = \frac{14}{\sin 130^\circ}$$

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

$$\boxed{b \cancel{\approx 19.7}}$$

$$\boxed{b \approx 10.5}$$

11.



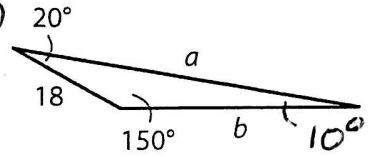
$$\frac{\sin 35^\circ}{b} = \frac{\sin 130^\circ}{14} = \frac{\sin 15^\circ}{c}$$

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

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

$$\boxed{c \approx 4.7}$$

13.



$$\frac{\sin 10^\circ}{18} = \frac{\sin 150^\circ}{a} = \frac{\sin 20^\circ}{b}$$

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

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

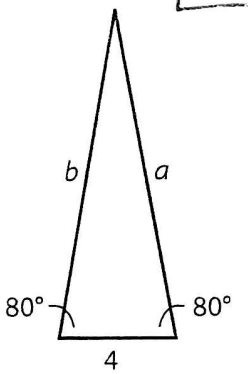
$$\boxed{a \approx 51.8}$$

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

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

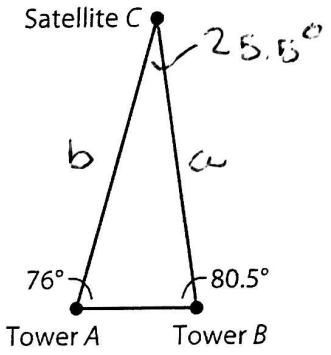
$$\boxed{b \approx 35.45}$$

14.



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?

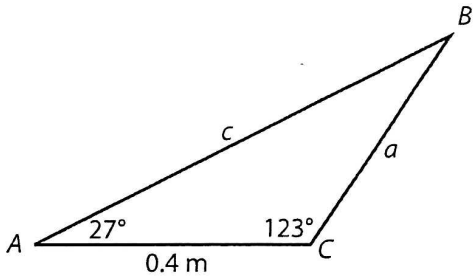


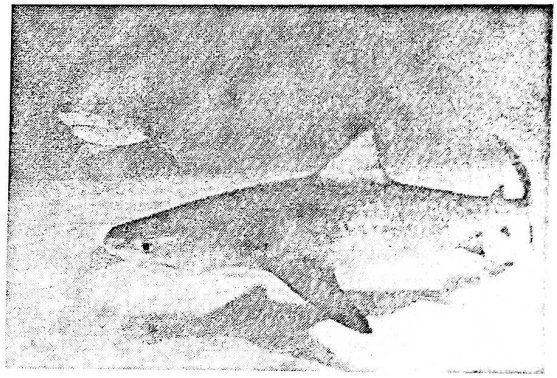
$$\frac{50}{\sin 23.5^\circ} = \frac{b}{\sin 80.5^\circ} = \frac{a}{\sin 76^\circ}$$

$$\frac{50 \sin 80.5^\circ}{\sin 23.5^\circ} = b \qquad \frac{50 \sin 76^\circ}{\sin 23.5^\circ} = a$$

$$\boxed{b \approx 123.67} \qquad \boxed{a \approx 121.67}$$

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.





Review:

Find the exact values. List ALL possible solutions.

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

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

$\cos \pi/2 = 0$

$\sin^{-1}(0) = \theta$

$\boxed{\theta = 0, \pi, 2\pi}$

3. $\tan^{-1}\frac{-\sqrt{3}}{3} =$