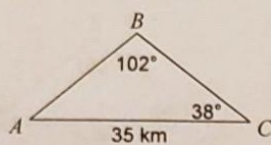


Warm Up-Law of Sines and Cosine

Solve each triangle. Be sure to set up your equations. Round angles to nearest degree and sides to nearest tenth.

1)



$$A = 40^\circ \quad a = 23$$

$$B = 102^\circ \quad b = 35$$

$$C = 38^\circ \quad c = 22$$

$$\angle A = 180 - 102 - 38 = 40^\circ$$

$$\frac{\sin 40}{a} = \frac{\sin 102}{35} = \frac{\sin 38}{c}$$

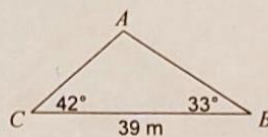
$$a = \frac{35 \sin 40}{\sin 102}$$

$$c = \frac{35 \sin 38}{\sin 102}$$

$$a = 23$$

$$c = 22$$

2)



$$A = 105^\circ \quad a = 39$$

$$B = 33^\circ \quad b = 22$$

$$C = 42^\circ \quad c = 27$$

$$\angle A = 180 - 42 - 33 = 105$$

$$\frac{\sin 105}{39} = \frac{\sin 33}{b} = \frac{\sin 42}{c}$$

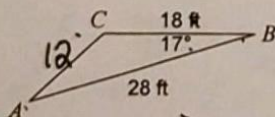
$$b = \frac{39 \sin 33}{\sin 105}$$

$$c = \frac{39 \sin 42}{\sin 105}$$

$$b = 22$$

$$c = 27$$

3)



$$b = \sqrt{12^2 + 18^2 - 2(12)(18)\cos 17}$$

$$b = 12$$

$$\frac{\sin 17}{12} = \frac{\sin A}{18} = \frac{\sin C}{28}$$

$$C = \sin^{-1}\left(\frac{28 \sin 17}{12}\right) = 43^\circ$$

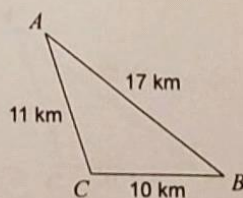
$$\angle A = 180 - (17 + 43) = 120$$

$$A = 120^\circ \quad a = 18$$

$$B = 17^\circ \quad b = 12$$

$$C = 43^\circ \quad c = 28$$

4)



$$C = \cos^{-1}\left(\frac{11^2 + 10^2 - 17^2}{2(11)(10)}\right)$$

$$C = 108^\circ$$

$$\frac{\sin A}{10} = \frac{\sin B}{11} = \frac{\sin 108}{17}$$

$$B = \sin^{-1}\left(\frac{11 \sin 108}{17}\right) = 38^\circ$$

$$\angle A = 180 - 108 - 38$$

$$A = 34^\circ \quad a = 10$$

$$B = 38^\circ \quad b = 11$$

$$C = 108^\circ \quad c = 17$$