

KEY

Instructions: Show all work. Use exact answers unless specifically asked to round. Answer all parts of each question.

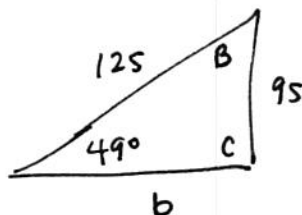
1. Find the triangle(s) with the following properties. Use the law of sines or cosines as appropriate. Round degrees and sides to 1 decimal place. If the information can produce two triangles, find both. If the information cannot produce any triangles, state that and explain why.

a. $a = 95, c = 125, A = 49^\circ$

$$\frac{\sin 49^\circ}{95} = \frac{\sin C}{125} \quad B = 93.25$$

$$\sin C = \frac{125 \sin 49^\circ}{95} = 0.993... \\ = 83.2356...$$

$$B = 47.8^\circ$$



2 triangles

$$C = 96.8^\circ$$

$$B = 34.2^\circ$$

$$\frac{b}{\sin 47.8^\circ} = \frac{95}{\sin 49^\circ}$$

$$\frac{b}{\sin 34.2^\circ} = \frac{95}{\sin 49^\circ} \quad b = 70.75$$

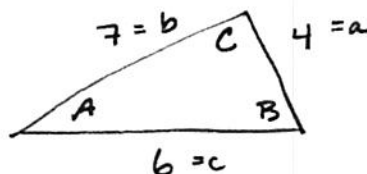
b. $a = 4, b = 7, c = 6$

$$c^2 = a^2 + b^2 - 2ab \cos C$$

$$\frac{c^2 - a^2 - b^2}{-2ab} = \cos C$$

$$\frac{6^2 - 4^2 - 7^2}{-2(4)(7)} = \cos C$$

$$C = 58.8^\circ$$



$$\frac{\sin C}{c} = \frac{\sin B}{b}$$

$$A = 34.8^\circ$$

$$\frac{\sin 58.8^\circ}{6} \cdot 7 = \sin B \Rightarrow B = 86.4^\circ$$

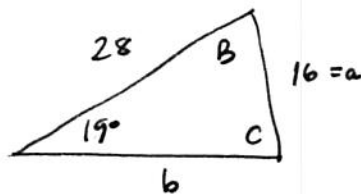
c. $a = 16, c = 28, A = 19^\circ$

$$\frac{\sin 19^\circ}{16} = \frac{\sin C}{28}$$

$$\frac{28 \sin 19^\circ}{16} = \sin C$$

$$C = 34.7^\circ$$

$$B = 126.3^\circ$$



2 triangles

$$\text{or } C = 145.3^\circ$$

$$B = 15.7^\circ$$

$$\frac{b}{\sin 126.3^\circ} = \frac{16}{\sin 19^\circ} \quad b = 39.6$$

$$\frac{b}{\sin 15.7^\circ} = \frac{16}{\sin 19^\circ} \quad b = 13.3$$