

Key

Solve the SSA triangle. Indicate whether the given measurements result in no triangle, one triangle, or two triangles. Solve the resulting triangle. Round the answer to the nearest tenth.

1) $B = 22^\circ$, $b = 16.8$, $a = 22.42$

$$\frac{\sin 22}{16.8} = \frac{\sin A}{22.42}$$

$$m\angle A_1 = 30^\circ$$

$$m\angle C_1 = 180 - 52 = 128^\circ$$

2 Δ s.

$$\sin A = .5 \quad \sin^{-1}\left(\frac{1}{2}\right) = \boxed{30^\circ}$$

Is there an A_2 ?

$$180 - 30 = 150$$

$$+ 22$$

$$\hline 172 < 180 \text{ "yes!"}$$

$$m\angle A_2 = 150$$

$$m\angle C_2 = 8^\circ$$

2) $B = 96^\circ$, $b = 3$, $a = 24$

$$\frac{\sin 96}{3} = \frac{\sin A}{24}$$

$$\frac{24 \sin 96}{3} = \sin A$$

$$7.96 = \sin A$$

no triangle

3) $a = 7$, $b = 9$, $B = 49^\circ$

$$\frac{\sin B}{b} = \frac{\sin A}{a}$$

$$\frac{\sin 49}{9} = \frac{\sin A}{7}$$

$$\frac{7 \sin 49}{9} = \sin A$$

$$.587 = \sin A$$

$$35.94 = 36^\circ = m\angle A_1, \quad m\angle C = 105^\circ$$

 $m\angle A_2$ if it exists.

$$180 - 36 = 144^\circ = A_2$$

$$+ 49$$

$$\hline 193 > 180$$

one triangle