

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c} \quad \text{OR} \quad \frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

Case 3: The Ambiguous Case (ASS)
 → No Solutions
 → One Solution Set
 → Two Solution Sets

$A=60^\circ$ $b=14$ $a=4$ $A=36^\circ$ $b=5$ $a=8$ $A=58^\circ$ $b=5$ $a=4.5$

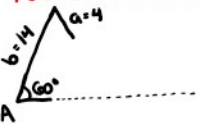
$B = \emptyset$ $C = \emptyset$ $c = \emptyset$ $B = 21.55^\circ$ $B = 158.45^\circ$ $B = 70.44^\circ$ $B = 109.56^\circ$ ✓

$$\frac{\sin 60}{4} = \frac{\sin B}{14} = \frac{\sin C}{c}$$

$$0.22 = \frac{\sin B}{14} \cdot 14$$

$$\sin^{-1} 3.03 = \sin B$$

ERROR = B
NO SOLUTIONS!



$$\frac{\sin 36}{8} = \frac{\sin B}{5} = \frac{\sin 122.45}{c}$$

$$0.07 = \frac{\sin B}{5} \cdot 5$$

$$\sin^{-1} 0.37 = \sin B$$

$$21.55^\circ = B$$

$$A + B + C = 180^\circ$$

$$36^\circ + 21.55^\circ + C = 180^\circ$$

$$C = 122.45^\circ$$

$$\frac{\sin 36}{8} = \frac{\sin 122.45}{c}$$

$$0.07 = \frac{\sin 122.45}{c} \cdot c$$

$$c = \frac{\sin 122.45}{0.07}$$

$$C = 11.49$$

Check for 2nd Solution:

$$180^\circ - 21.55^\circ = 158.45^\circ$$

$$158.45^\circ + 36^\circ = 194.45^\circ$$

bigger than 180°,
A 2nd Solution does NOT exist

$$\frac{\sin 58}{4.5} = \frac{\sin B}{5} = \frac{\sin 12.44}{c}$$

$$0.195 = \frac{\sin B}{5} \cdot 5$$

$$\sin^{-1} 0.94 = \sin B$$

$$70.44^\circ = B$$

$$A + B + C = 180^\circ$$

$$58^\circ + 70.44^\circ + C = 180^\circ$$

$$C = 51.56^\circ$$

$$\frac{\sin 58}{4.5} = \frac{\sin 51.56}{c}$$

$$0.19 = \frac{\sin 51.56}{c} \cdot c$$

$$c = \frac{\sin 51.56}{0.19}$$

$$C = 4.16$$

Check for 2nd Solution:

$$180^\circ - 70.44^\circ = 109.56^\circ$$

$$109.56^\circ + 58^\circ = 167.56^\circ$$

less than 180°
A 2nd Solution does exist

$$A + B + C = 180^\circ$$

$$58^\circ + 109.56^\circ + C = 180^\circ$$

$$C = 12.44^\circ$$

Steps to Check for a Second Solution Set:

$$180^\circ - (\text{1st Angle You Calculated}) = \text{Potential New Value for the First Angle You Calculated}$$

Check if the Potential New Value can coexist in a Δ with the Given Angle

$$\frac{\sin 58}{4.5} = \frac{\sin 12.44}{c}$$

$$0.19 = \frac{\sin 12.44}{c} \cdot c$$

$$c = \frac{\sin 12.44}{0.19}$$

$$C = 1.14$$