

$$\underline{40} \quad 20+20 = 0$$

$$\underline{42} \quad 21+21 = 4$$

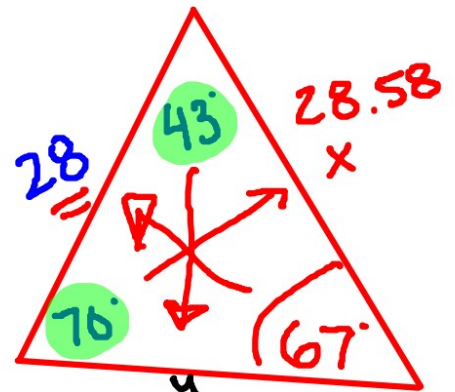
$$\underline{44} \quad 22+22 = 8$$

$$\underline{46} \quad 23+23 = 12$$

$$\underline{48} \quad 24+24 = ?$$

$$\underline{50} \quad 25+25 = 0$$

②



Solve the triangle

$$\frac{28}{\sin 67^\circ} = \frac{X}{\sin 70^\circ}$$

$$28 \sin 70^\circ = X \sin 67^\circ$$

$$X = \frac{28 \sin 70^\circ}{\sin 67^\circ}$$

$$X = 28.58$$

Law of Sines (Ambiguous Case)

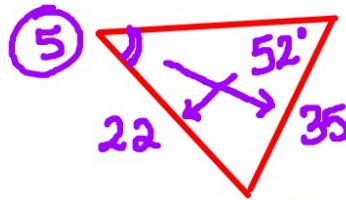
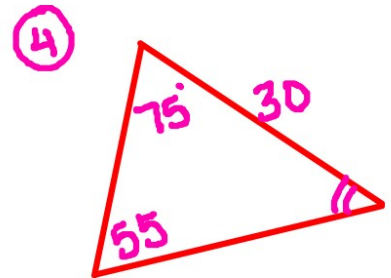
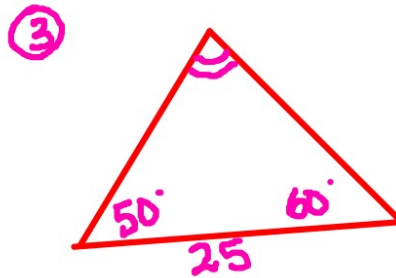
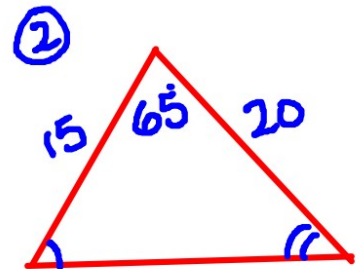
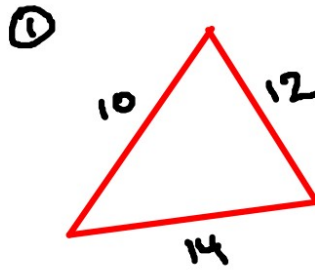
Ways to Prove
Triangle congruent

① SSS

② SAS

③ ASA

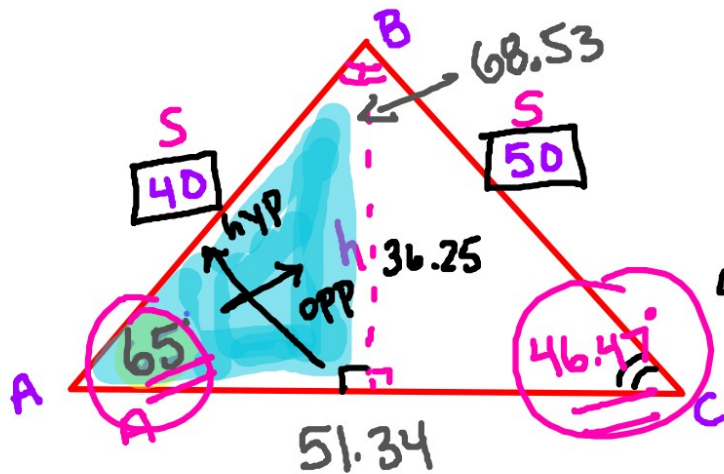
④ AAS



⑤ SSA can not prove triangles

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* We can use Law of Sines
when we have ASA or AAS
and "sometimes" when we have SSA.



Ambiguous Case (SSA)

* Angle is Acute

$$40 \cdot \sin 65^\circ = \frac{h}{40} \cdot 40$$

$$h = 36.25$$

$$\frac{50}{\sin 65^\circ} = \frac{40}{\sin C}$$

$$\sin C = \frac{40 \sin 65^\circ}{50}$$

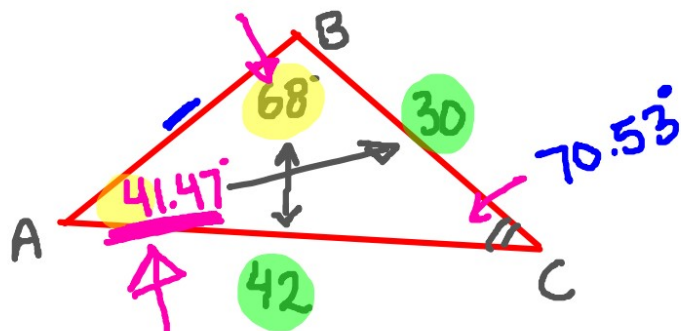
$$\frac{40 \sin 65^\circ}{50} = \frac{50 \sin C}{50}$$

$$\sin^{-1} \left(\frac{40 \sin 65^\circ}{50} \right) = C$$

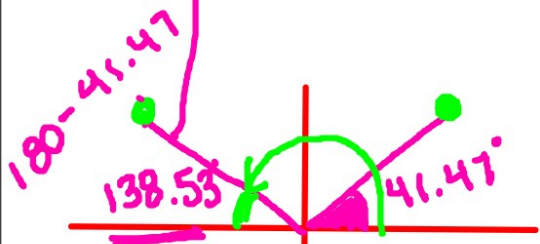
$$m\angle B \approx \underline{\underline{68.53^\circ}}$$

$$m\angle C \approx \underline{\underline{46.47^\circ}}$$

$$a = 30 \quad b = 42 \quad B = 68^\circ$$



ONE TRIANGLE



$\angle A$ can NOT be 138.53° so we have one triangle

$$\frac{42}{\sin 68^\circ} = \frac{30}{\sin A}$$

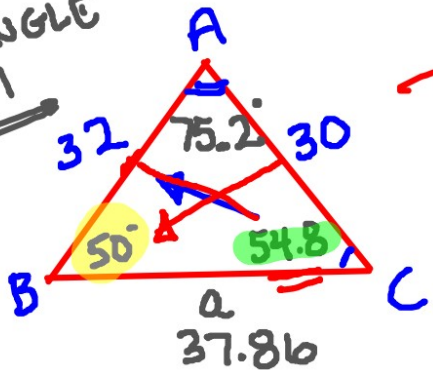
$$\left(\frac{30 \sin 68^\circ}{42} \right) = \frac{42 \sin A}{42}$$

$$\sin^{-1} \left(\frac{30 \sin 68^\circ}{42} \right) = A$$

$$\textcircled{*} 41.47^\circ \approx A$$

Check if the supplement (180) could be possible

TRIANGLE
#1



* SSA *

$$\frac{30}{\sin 50^\circ} = \frac{32}{\sin C}$$

$$\frac{30}{\sin 50} = \frac{a}{\sin 75.2}$$

$$\frac{32 \sin 50^\circ}{30} = \frac{30 \sin C}{30}$$

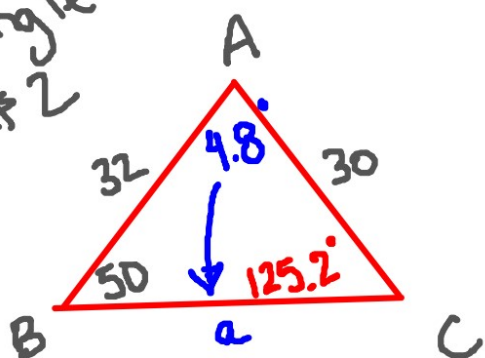
$$\frac{30 \sin 75.2}{\sin 50} = \frac{a \cancel{\sin 50}}{\cancel{\sin 50}}$$

$$\sin^{-1} \left(\frac{32 \sin 50^\circ}{30} \right) = C$$

$$a \approx 37.86$$

$$C \approx 54.8$$

Triangle
#2



$$m\angle C \approx 125.2^\circ$$

$$m\angle A \approx 4.8^\circ$$

$$\frac{30}{\sin 50} = \frac{a}{\sin 4.8^\circ}$$