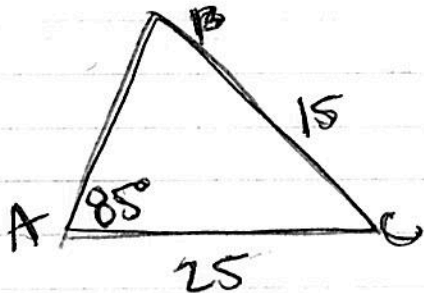


Practice w/ ASS

① In $\triangle ABC$, $a=15$, $b=25$, $A=85^\circ$. Solve the \triangle .



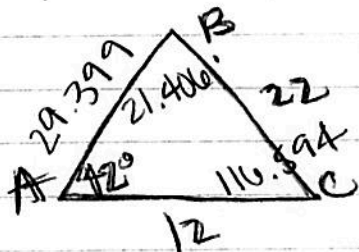
ASS \rightarrow LOS

$$\frac{\sin 85^\circ}{15} = \frac{\sin B}{25} \rightarrow \sin B = \frac{25 \sin 85^\circ}{15}$$

$$B = \sin^{-1}(\uparrow) \Rightarrow \text{ERROR}$$

No such \triangle exists

② In $\triangle ABC$, $a=22$, $b=12$, $A=42^\circ$. Solve the \triangle .



ASS \rightarrow LOS

$$\frac{\sin 42^\circ}{22} = \frac{\sin B}{12} \rightarrow \sin B = \frac{12 \sin 42^\circ}{22}$$

$$B = \sin^{-1}(\uparrow)$$

$$B = 21.406^\circ$$

$$C = 116.594^\circ$$

CASE 2: $180^\circ - \angle B$

$$180^\circ - 21.406^\circ =$$

$$\angle B = 158.594^\circ$$

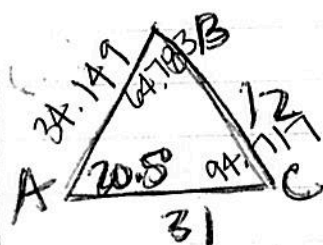
$$\angle C = 180 - 42 - 158.594$$

*No 2nd \triangle *

$$\frac{\sin 42^\circ}{22} = \frac{\sin 116.594^\circ}{c}$$

$$c = \frac{22 \sin 116.594^\circ}{\sin 42^\circ} = \frac{29.399}{103}$$

③ In $\triangle ABC$, $a=12$, $b=31$, $A=20.5^\circ$. Solve the \triangle .



ASS \rightarrow LOS

$$\frac{\sin(20.5^\circ)}{12} = \frac{\sin B}{31} \rightarrow \sin B = \frac{31 \sin(20.5^\circ)}{12}$$

$$B = \sin^{-1}(\uparrow)$$

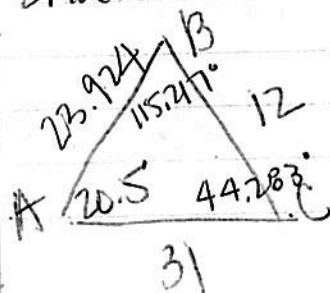
$$\leftarrow \cancel{B} = 64.783^\circ$$

$$\boxed{\cancel{C} = 94.717}$$

$$\frac{\sin(20.5^\circ)}{12} = \frac{\sin(94.717^\circ)}{c}$$

$$c = \frac{12 \sin(94.717^\circ)}{\sin(20.5^\circ)}, \quad \boxed{c = 34.149}$$

2nd \triangle : $180^\circ - \cancel{B} \rightarrow 180^\circ - 64.783^\circ$



$$\boxed{\cancel{B} = 115.217^\circ}$$

$$\boxed{\cancel{C} = 44.283^\circ}$$

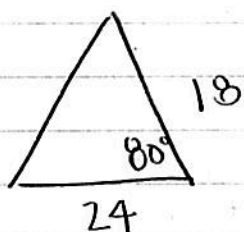
$$\frac{\sin(20.5^\circ)}{12} = \frac{\sin(44.283^\circ)}{c}$$

$$c = \frac{12 \sin(44.283^\circ)}{\sin(20.5^\circ)} \rightarrow \boxed{c = 23.924}$$

Area: $(SAS) \rightarrow A = \frac{1}{2}(\text{side 1})(\text{side 2})(\sin(\text{incl } \angle))$

$(SSS) \rightarrow A = \sqrt{s(s-a)(s-b)(s-c)}$
where $s = \frac{(a+b+c)}{2}$

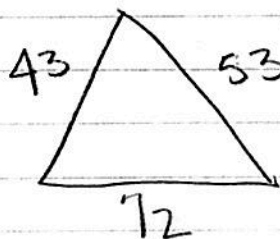
- 4) Find the area of a triangular lot containing sides 24 yds and 18 yds and form an \angle of 80° .



$(SAS) \rightarrow A = \frac{1}{2}(24)(18)\sin(80^\circ)$

$$A = 212.718 \text{ yds}^2$$

- 5) Find the area of a Δ having side lengths 43 m, 53 m, and 72 m.



$(SSS) \quad s = \frac{43+53+72}{2}$

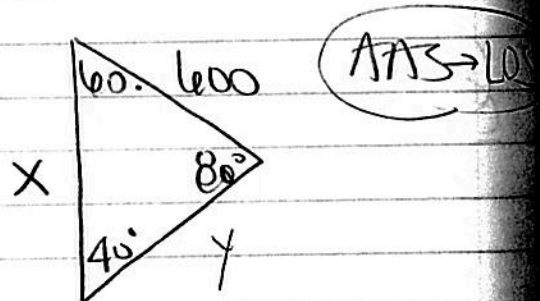
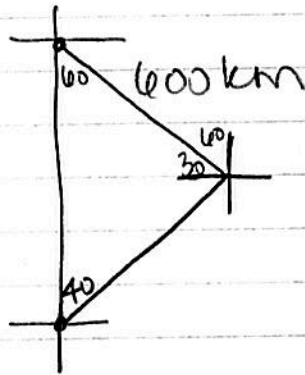
$$s = 84$$

$$A = \sqrt{84(84-43)(84-53)(84-72)}$$

$$A = 1131.886 \text{ m}^2$$

Challenge Questions

6) A plane flies 600 km on a ~~heading~~^{bearing} of 300° . It then flies directly south for a while and finally ~~heading~~^{bearing} to return to its starting point. Find the total distance traveled.



$$\frac{\sin 40^\circ}{600} = \frac{\sin 80^\circ}{x}$$

$$\frac{\sin 40^\circ}{600} = \frac{\sin 60^\circ}{y}$$

$$x = \frac{600 \sin 80^\circ}{\sin 40^\circ}$$

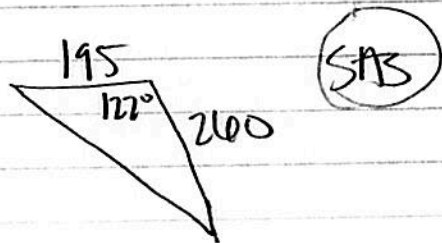
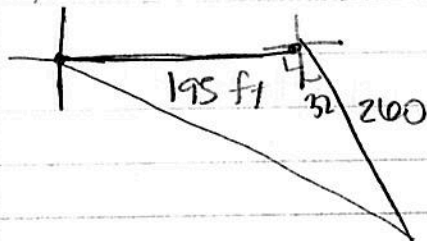
$$y = \frac{600 \sin 60^\circ}{\sin 40^\circ}$$

$$x = 919.253 \text{ km}$$

$$y = 808.377 \text{ km}$$

$$\text{Total} = 2327.63 \text{ km}$$

8) Find the area of the following plot of land. From a granite post, proceed 195 ft east then along a ~~bearing~~^{bearing} of $S 32^\circ E$ for 260 ft, then and finally along a line back to the granite post.



$$A = \frac{1}{2}(195)(260) \sin(122^\circ)$$

$$A = 2498.019 \text{ ft}^2$$