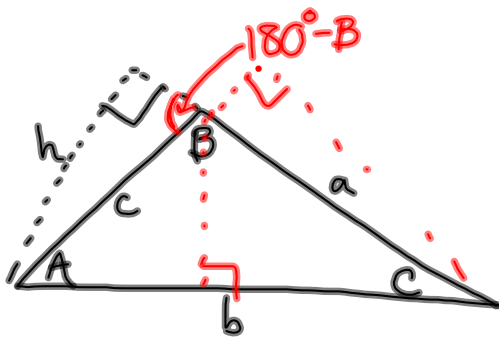
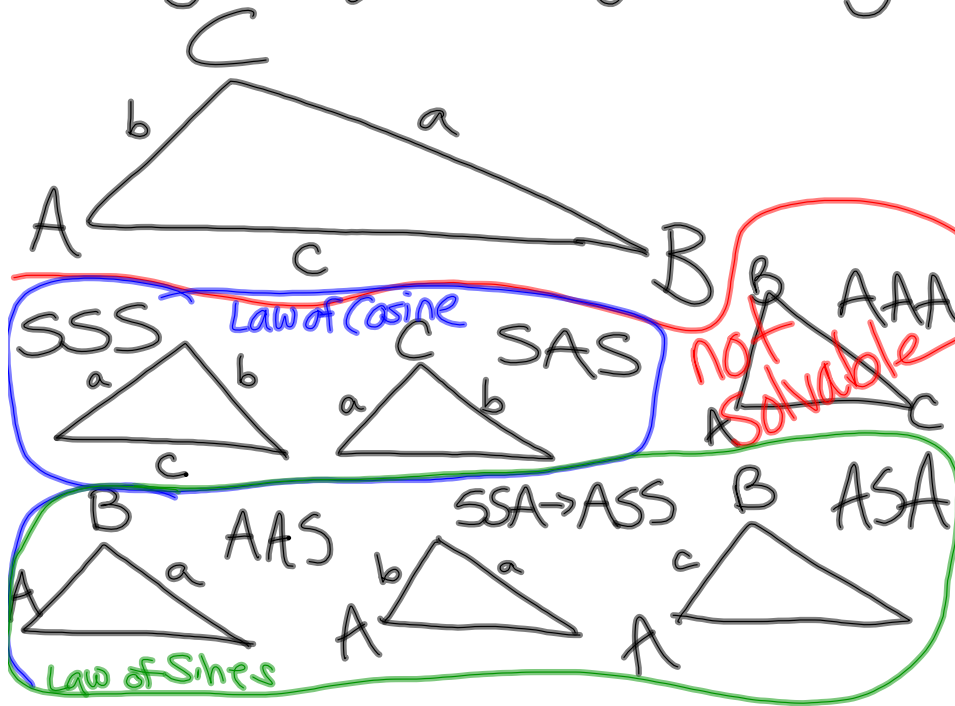


7.1 The Law of Sines

Solving oblique (not right) triangles.



$$\sin C = \frac{h}{b} \quad \sin(180^\circ - B) = \frac{h}{c}$$

$$\sin 180^\circ \cos B - \cos 180^\circ \sin B = \sin B$$

$$\sin C = \frac{h}{b}, \quad \sin B = \frac{h}{c}$$

$$h = b \sin C, \quad h = c \sin B$$

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

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

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

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

The Law of Sines:

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

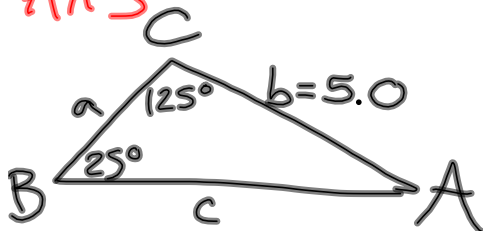
OR

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

7.1 handout

2. $B=25^\circ$, $C=125^\circ$, $b=5.0$

AAS



$$A = 180^\circ - 125^\circ - 25^\circ = 30^\circ$$

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

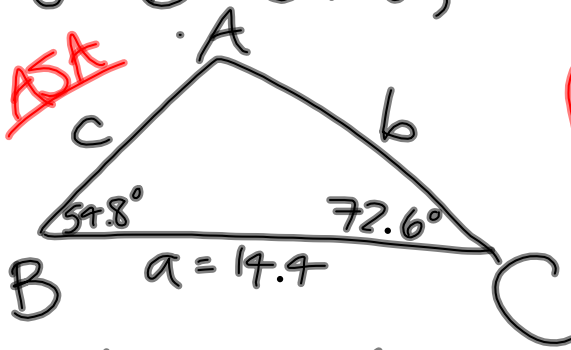
$$\frac{a}{\sin 30^\circ} = \frac{5}{\sin 25^\circ}$$

$$\frac{c}{\sin 125^\circ} = \frac{5}{\sin 25^\circ}$$

$$a = \frac{5 \sin 30^\circ}{\sin 25^\circ} \approx 5.9$$

$$c = \frac{5 \sin 125^\circ}{\sin 25^\circ} \approx 9.7$$

8. $B = 54.8^\circ$, $C = 72.6^\circ$, $a = 14.4$



$$A = 180^\circ - 54.8^\circ - 72.6^\circ = 52.6^\circ$$

$$\frac{b}{\sin 54.8^\circ} = \frac{14.4}{\sin 52.6^\circ}$$

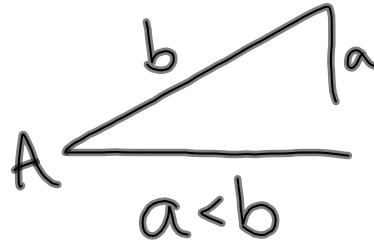
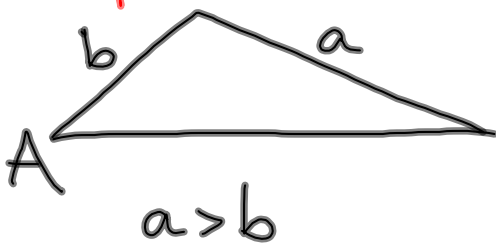
$$\frac{c}{\sin 72.6^\circ} = \frac{14.4}{\sin 52.6^\circ}$$

$$b = \frac{14.4 \sin 54.8^\circ}{\sin 52.6^\circ} \approx 14.8$$

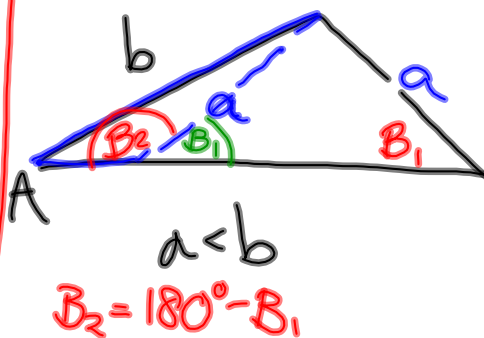
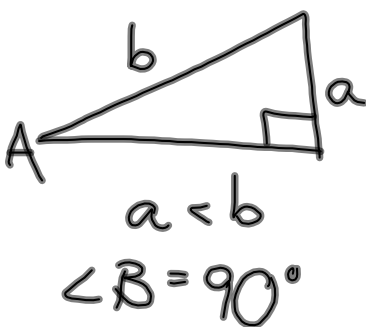
$$c = \frac{14.4 \sin 72.6^\circ}{\sin 52.6^\circ} \approx 17.3$$

ASS - Problematic

one possible solution:

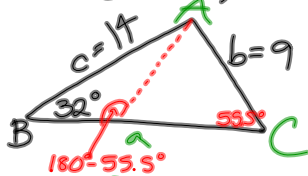


no solution



2 solutions

14. $B = 32^\circ, c = 14, b = 9$



$$\frac{\sin C}{14} = \frac{\sin 32^\circ}{9}$$

$$\sin C = \frac{14 \sin 32^\circ}{9}$$

$$\sin^{-1}(\sin C) = \sin^{-1}\left(\frac{14 \sin 32^\circ}{9}\right)$$

$$C = \sin^{-1}\left(\frac{14 \sin 32^\circ}{9}\right) \approx 55.5^\circ$$

$$A = 180^\circ - 32^\circ - 55.5^\circ = 92.5^\circ$$

$$\frac{a}{\sin 92.5^\circ} = \frac{9}{\sin 32^\circ}$$

$$a = \frac{9 \sin 92.5^\circ}{\sin 32^\circ} \approx 17$$

Case 2

$$\angle C_2 = 180^\circ - 55.5^\circ = 124.5^\circ$$

$$\frac{c}{\sin 124.5^\circ} = \frac{9}{\sin 32^\circ}$$

$$c = \frac{9 \sin 124.5^\circ}{\sin 32^\circ} \approx$$

2 case soln
- more than one row!

7.1 book

1, 2, 4, 6, 7, 10