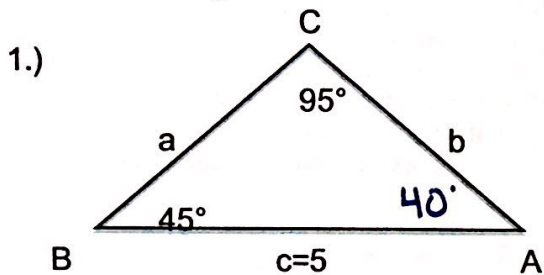


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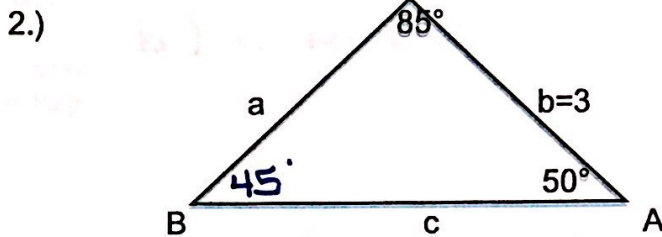
Law of Sin

Solve the triangle:



$$\frac{\sin 95^\circ}{5} = \frac{\sin 45^\circ}{b} \quad \left| \quad \frac{\sin 95^\circ}{5} = \frac{\sin 40^\circ}{a} \right.$$

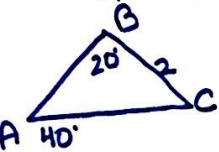
$$b = 3.5 \quad \left| \quad a = 3.2 \right.$$



$$\frac{\sin 45^\circ}{3} = \frac{\sin 50^\circ}{a} \quad \left| \quad \frac{\sin 45^\circ}{3} = \frac{\sin 85^\circ}{c} \right.$$

$$a = 3.3 \quad \left| \quad c = 4.2 \right.$$

3.) Solve the triangle if $A = 40^\circ$, $B = 20^\circ$, $a = 2$



$$\frac{\sin 40^\circ}{2} = \frac{\sin 20^\circ}{b} \quad \left| \quad \frac{\sin 40^\circ}{2} = \frac{\sin 120^\circ}{c} \right.$$

$$b = 1.1 \quad \left| \quad c = 2.7 \right.$$

Two side and an angle are given. Determine whether the information results in one triangle, two triangle are no triangle. Solve any triangle that results.

4.) $a = 3$, $b = 2$ and $A = 50^\circ$

1Δ

$$\frac{\sin 50^\circ}{3} = \frac{\sin B}{2}$$

$$\angle B = 30.7^\circ$$

$$\angle C = 99.3^\circ$$

$$\frac{\sin 50^\circ}{3} = \frac{\sin 99.3^\circ}{c}$$

$$c = 3.86$$

(180 - 30.7 + 50) > 180
1Δ

5.) $b = 5$, $c = 3$ and $B = 100^\circ$

1Δ

$$\frac{\sin 100^\circ}{5} = \frac{\sin C}{3}$$

$$\angle A = 43.8^\circ$$

$$\frac{\sin 100^\circ}{5} = \frac{\sin 43.8^\circ}{a}$$

$$a = 3.51$$

$$\angle C = 36.2^\circ$$

$$(180 - 36.2 + 100) > 180$$

1Δ

6.) $a = 4$, $b = 5$ and $A = 60^\circ$

no Δ

$$\frac{\sin 60^\circ}{4} = \frac{\sin B}{5}$$

Error no Δ

7.) $b = 4$, $c = 6$ and $B = 20^\circ$

2Δ

$$\frac{\sin 20^\circ}{4} = \frac{\sin C}{6}$$

$$C = 30.9^\circ$$

$$(180 - 30.9 + 20) < 180$$

2Δ

1Δ

$$\angle A = 129.1^\circ \quad a = 9.08$$

$$\angle B = 20^\circ \quad b = 4$$

$$\angle C = 30.9^\circ \quad c = 6$$

2Δ

$$\angle A = 10.9^\circ \quad a = 2.21$$

$$\angle B = 20^\circ \quad b = 4$$

$$\angle C = 149.1^\circ \quad c = 6$$

8.) $a = 2$, $b = 1$ and $C = 100^\circ$

no Δ

$$\frac{\sin 100^\circ}{1} = \frac{\sin A}{2}$$

Error no Δ

9.) $a = 2$, $c = 1$ and $C = 25^\circ$

2Δ

$$\frac{\sin 25^\circ}{1} = \frac{\sin A}{2}$$

$$\angle A = 57.7^\circ$$

$$(180 - 57.7 + 25) < 180$$

2Δ

1Δ

$$a = 2 \quad \angle A = 57.7^\circ \quad a = 2$$

$$b = 2.35 \quad \angle B = 97.3^\circ \quad b = 1.28$$

$$c = 1 \quad \angle C = 25^\circ \quad c = 1$$

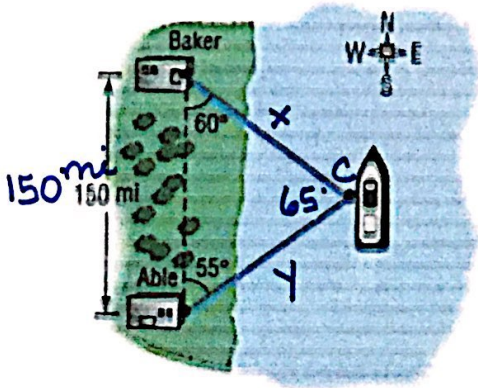
$$\angle A = 122.3^\circ$$

$$\angle B = 32.7^\circ$$

$$\angle C = 25^\circ$$

- .) **Rescue at Sea** Coast Guard Station Able is located 150 miles due south of Station Baker. A ship at sea sends an SOS call that is received by each station. The call to Station Able indicates that the ship is located $N55^\circ E$; the call to Station Baker indicates that the ship is located $S60^\circ E$.
 (a) How far is each station from the ship?
 (b) If a helicopter capable of flying 200 miles per hour is dispatched from the nearest station to the ship, how long will it take to reach the ship?

- a.) able 143.33 miles
 Baker 135.58 miles
 b.) 41 minutes



$$\frac{\sin 65}{150} = \frac{\sin 55}{x}$$

$$x = 135.58 \text{ miles}$$

Nearest

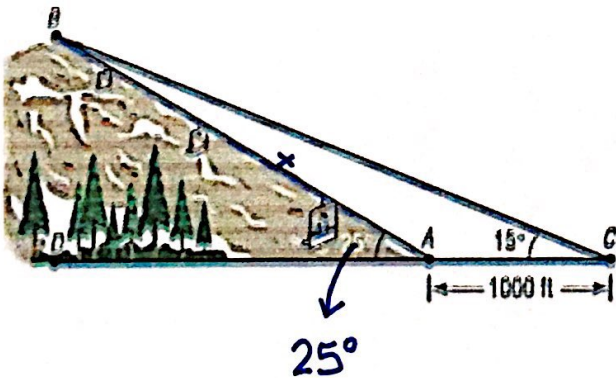
$$\frac{\sin 65}{150} = \frac{\sin 60}{y}$$

$$y = 143.32 \text{ miles}$$

3.3 miles per minute

$$135.58 / 3.33 = 41 \text{ minutes}$$

- .) **Finding the Length of a Ski Lift** Consult the figure. To find the length of the span of a proposed ski lift from A to B , a surveyor measures the angle DAB to be 25° and then walks off a distance of 1000 feet to C and measures the angle ACB to be 15° . What is the distance from A to B ?



$$\angle A = 155^\circ$$

$$\angle B = 10^\circ$$

$$\frac{\sin 10}{1000} = \frac{\sin 15}{x}$$

$$x = 1490.48 \text{ ft}$$