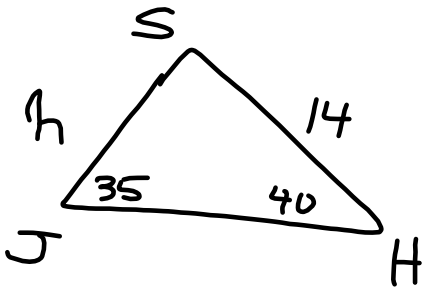

$$\frac{\sin 40}{h} = \frac{\sin 35}{14}$$

$$\frac{14(\sin 40)}{\sin 35} = \frac{(\sin 35)h}{\sin 35}$$

$$15.7 = h$$

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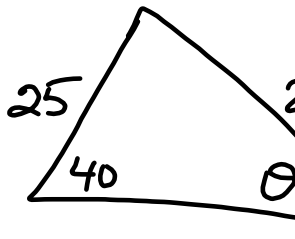


$$\frac{\sin\theta}{25} = \frac{\sin 40}{20}$$

$$\frac{20(\sin\theta)}{20} = \frac{25(\sin 40)}{20}$$

$$\sin\theta = 0.8$$

CASE

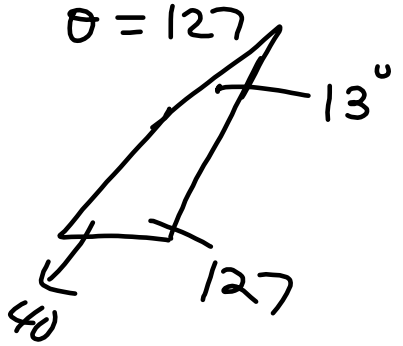
$$\theta = \sin^{-1}(.8)$$

$$\theta = 53^\circ$$

CASE II

$$\theta = 180 - 53$$

$$\theta = 127$$



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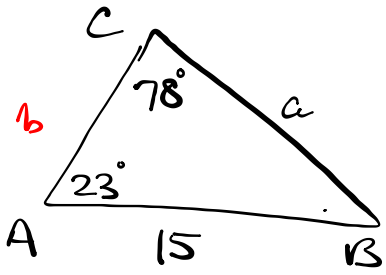
Homework:



$$\frac{\sin 23}{a} = \frac{\sin 78}{15}$$

$$\frac{a(\sin 78)}{\sin 78} = \frac{15(\sin 23)}{\sin 78}$$

$$a = 6$$

$$\angle B = 180 - (78 + 23)$$
$$= 180 - (101)$$
$$= 79$$

$$\therefore \frac{\sin 79}{b} = \frac{\sin 78}{15}$$

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Ambiguous Case

→ may need to find measures for 2 triangles

i.e. Case 1 and Case 2

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Example In $\triangle ABC$, $\angle A = 30^\circ$, $a = 24$, $b = 42$. Determine Measures of the other sides & Angles.

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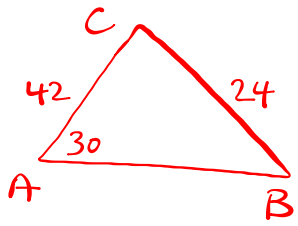
Soln



Find $\angle B$

$$\frac{\sin 30}{24} = \frac{\sin B}{42}$$

$$\frac{24 \sin B}{24} = \frac{42(\sin 30)}{24}$$

$$\sin B = 0.875$$

$$B = \sin^{-1}(.875)$$

$B = 61$ CASE 1

$\therefore \angle C = 180 - (30 + 61)$

$C = 180 - 91$

$\angle C = 89$

$\therefore$ Find c

$$\frac{\sin 89}{c} = \frac{\sin 30}{24}$$

$$\frac{c(\sin 30)}{\sin 30} = \frac{24(\sin 89)}{\sin 30}$$

$\therefore$ $c = 48$

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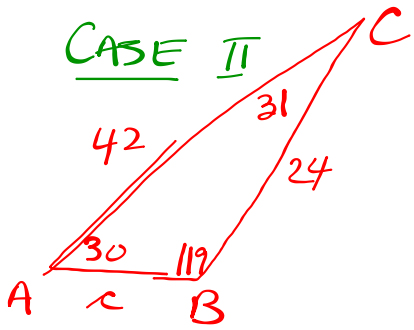
CASE II



$A = 30^\circ$

$B = 180 - 61 = 119$

$C = 180 - (119 + 30)$

$C = 180 - 149$

$C = 31^\circ$

Find c

$\frac{\sin 31}{c} = \frac{\sin 30}{24}$

$\frac{\sin 30(c)}{\sin 30} = \frac{\sin 31(24)}{\sin 30}$

$c = 24.7$

* According to John
- info given in original description will not change.

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Homework

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5a, 6a, 8b, 11, 13

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