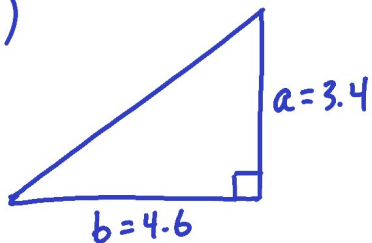


WARMUP

What method would you use to solve each triangle.

1)



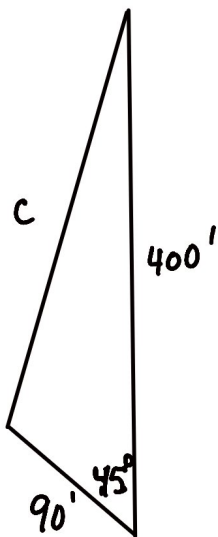
SOhT CAH TOA
Law of Cosines

2) $a=3.5, b=6.3, c=7.1$
SSS Cosines

3) $a=5.3, c=7.5, \beta=63^\circ$
SAS Cosines

4) $\alpha=38^\circ, \beta=65^\circ, b=6.3$
AAS Sines

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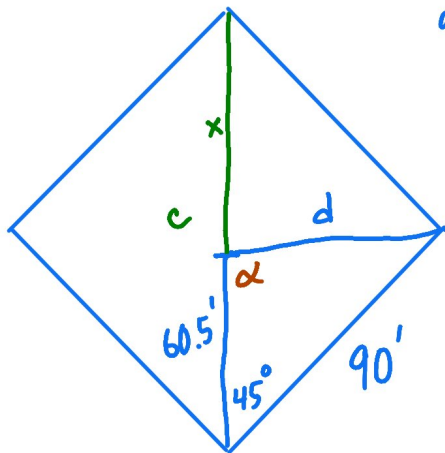


$$c^2 = 90^2 + 400^2 - 2 \cdot 90 \cdot 400 \cos 45^\circ$$

$$c^2 = 117188$$

$$c = 342'$$

29)



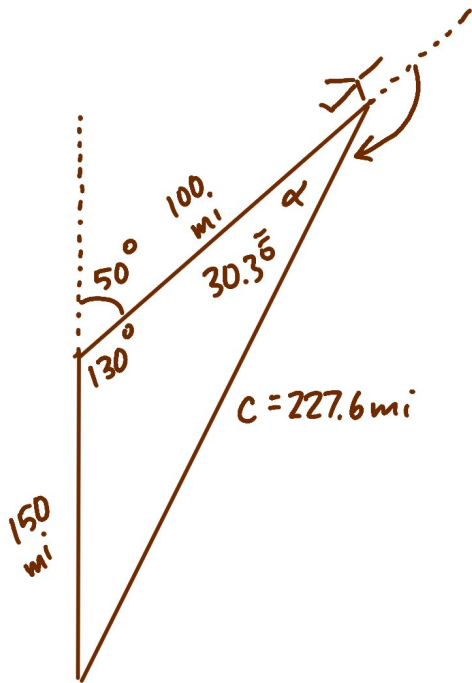
a) $d^2 = 60.5^2 + 90^2 - 2 \cdot 60.5 \cdot 90 \cos 45^\circ$
 $d = 63.7$

b) $90^2 + 90^2 = c^2$
 $c \approx 127.3$

2nd to pr. = $66.8'$
 $x = c - 60.5$

$$c) \frac{\sin \alpha}{90} = \frac{\sin 45^\circ}{63.7}$$

26)



$$a) c^2 = 150^2 + 100^2 - 2 \cdot 150 \cdot 100 \cos 130^\circ$$

$$c^2 = 51783.63$$

$$c = 227.6 \text{ mi}$$

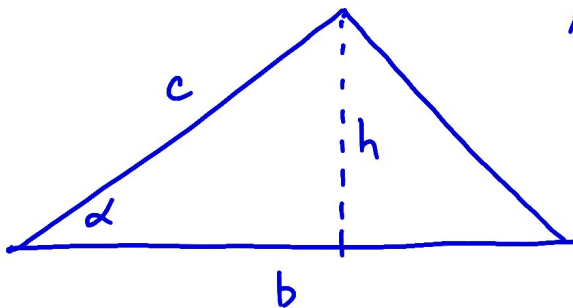
$$b) \frac{\sin \alpha}{150} = \frac{\sin 130^\circ}{227.6}$$

$$\sin \alpha = \frac{150 \sin 130^\circ}{227.6} = .5049$$

$$\alpha = 30.3^\circ$$

$$180 - 30.3 = 149.7^\circ$$

Section 7.4 Area of a Triangle



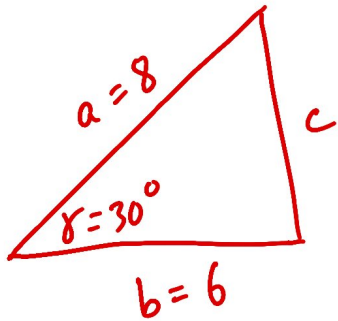
$$A = \frac{1}{2} b h$$

$$\sin \alpha = \frac{h}{c}$$

$$c \sin \alpha = h$$

$$\left. \begin{aligned} A &= \frac{1}{2} b c \sin \alpha \\ A &= \frac{1}{2} a c \sin \beta \\ A &= \frac{1}{2} a b \sin \gamma \end{aligned} \right\} \text{SAS}$$

ex: Find area if $a=8$, $b=6$, $\gamma=30^\circ$



$$A = \frac{1}{2} ab \sin \gamma$$

$$A = \frac{1}{2} \cdot 8 \cdot 6 \sin 30^\circ$$

$$A = 12$$

Heron's Formula \Rightarrow use if SSS

$$A = \sqrt{s(s-a)(s-b)(s-c)}$$

$$\text{where } s = \frac{1}{2}(a+b+c)$$

ex: $a=4$, $b=5$, $c=7$

$$s = \frac{1}{2}(4+5+7) = 8$$

$$A = \sqrt{8(8-4)(8-5)(8-7)}$$

$$A = \sqrt{8 \cdot 4 \cdot 3 \cdot 1}$$

$$A = \sqrt{96} \approx 9.8$$

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