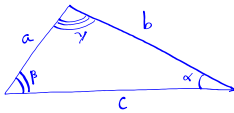


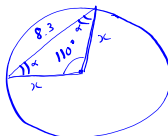
Law of Sines:



$$\frac{\sin \alpha}{a} = \frac{\sin \beta}{b} = \frac{\sin \gamma}{c}$$

$$\frac{a}{\sin \alpha} = \frac{b}{\sin \beta} = \frac{c}{\sin \gamma}$$

E.g.



Find the diameter of this circle?

$$\alpha = \frac{180 - 110}{2} = 35^\circ$$

Law of Sines:

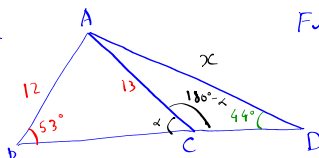
$$\frac{x}{\sin(35^\circ)} = \frac{8.3}{\sin(110^\circ)}$$

$$x = \frac{8.3}{\sin(110^\circ)} \cdot \sin(35^\circ)$$

Radius

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E.g.



Find AD

$$\frac{x}{\sin 53^\circ} = \frac{12}{\sin 44^\circ}$$

$$\frac{\sin(53^\circ)}{13} = \frac{\sin \alpha}{12}$$

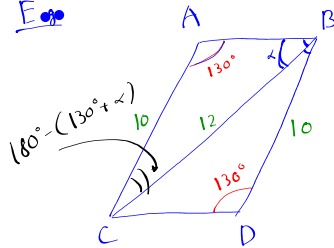
$$\sin \alpha = \frac{12 \cdot \sin(53^\circ)}{13}$$

$$\alpha \approx$$

$$\frac{13}{\sin(44^\circ)} = \frac{x}{\sin(180^\circ - \alpha)}$$

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E.g.



Find AB?

$$\frac{\sin(130^\circ)}{12} = \frac{\sin \alpha}{10}$$

$$\sin \alpha = \frac{10 \sin(130^\circ)}{12}$$

$$\alpha \approx$$

Area of triangle

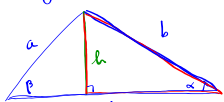


$$\text{Area} = \frac{1}{2} ab \sin(\gamma)$$

$$= \frac{1}{2} ac \sin(\beta) = \frac{1}{2} bc \sin(\alpha)$$

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Why is this true



$$\text{Area} = \frac{1}{2} c h$$

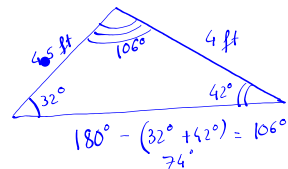
$$= \frac{1}{2} c b \sin \alpha$$

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

$$h = b \sin \alpha$$

table top (modern)

E.g.



Find the area of this table top.

$$\text{Area} = \frac{1}{2} \cdot (4.5) \cdot 4 \cdot \sin(106^\circ)$$

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