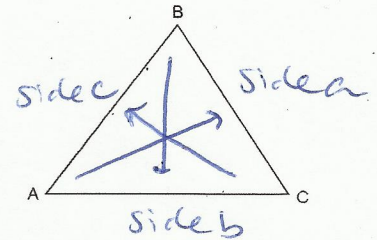


7.1 – Law of Sines

Law of Sines "Formulas"/Proportions →

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



– Only use the Law of Sines to solve a triangle if given the following:

Given Triangle # 1	Given Triangle # 2	Given Triangle # 3
<p>Type of Triangle: <u>ASA</u></p>	<p>Type of Triangle: <u>AAS</u></p>	<p>Type of Triangle: <u>SSA</u></p>

Example 1: Find indicated side or indicated angle. Round to tenth place.

<p>a.) Find side a.</p> $\frac{25}{\sin 52} = \frac{a}{\sin 66}$ $a \sin 52 = 25 \sin 66$ $a = \frac{25 \sin 66}{\sin 52}$ <p><u>$a = 29$</u></p>	<p>b.) Find angle C.</p> $\frac{32}{\sin 110} = \frac{19}{\sin C}$ $32 \sin C = 19 \sin 110$ $C = \sin^{-1} \left(\frac{19 \sin 110}{32} \right)$ <p><u>$C = 33.9^\circ$</u></p>	<p>c.) Find side x.</p> $\frac{13}{\sin 52} = \frac{x}{\sin 34}$ $x = \frac{13 \sin 34}{\sin 52}$ <p><u>$x = 9.1$</u></p>	<p>d.) Find angle θ.</p> $\frac{33}{\sin 83} = \frac{28}{\sin A}$ $33 \sin A = 28 \sin 83$ $A = \sin^{-1} \left(\frac{28 \sin 83}{33} \right)$ $A = 57.4^\circ$ $\theta = 180 - 83 - 57.4$ <p><u>$\theta = 39.6^\circ$</u></p>
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Example 2: Solve each triangle. Round to tenth place.

<p>a.)</p> $\frac{29}{\sin 38} = \frac{a}{\sin 84}$ $a \sin 38 = 29 \sin 84$ $a = \frac{29 \sin 84}{\sin 38}$ <p><u>$a = 43.9$</u></p> $\frac{29}{\sin 38} = \frac{c}{\sin 58}$ $c \sin 38 = 29 \sin 58$ $c = \frac{29 \sin 58}{\sin 38}$ <p><u>$c = 41.1$</u></p>	<p>b.)</p> $\frac{28}{\sin 76} = \frac{20}{\sin A}$ $28 \sin A = 20 \sin 76$ $A = \sin^{-1} \left(\frac{20 \sin 76}{28} \right)$ <p><u>$A = 43.9^\circ$</u></p> $C = 180 - 76 - 43.9$ <p><u>$C = 60.1^\circ$</u></p> $\frac{28}{\sin 76} = \frac{c}{\sin 60.1}$ $c \sin 76 = 28 \sin 60.1$ $c = \frac{28 \sin 60.1}{\sin 76}$ <p><u>$c = 25$</u></p>
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