

## 7-2 Law of Sines

Objectives:

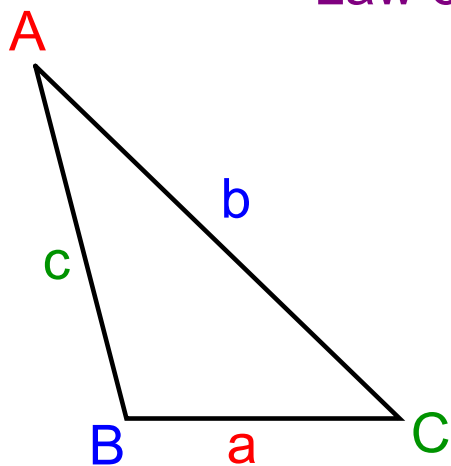
7-2a: I can solve a triangle using the Law of Sines.



"I saw the Sine!"

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### Law of Sines



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

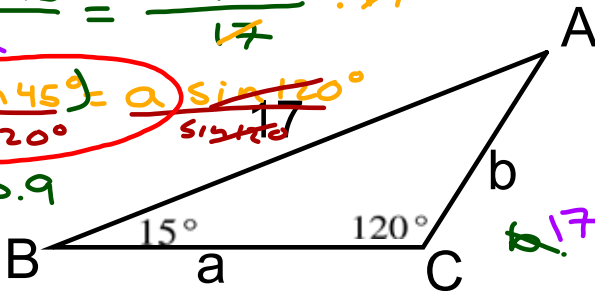
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Solve the triangle.

$$17 \frac{\sin 45^\circ}{a} = \frac{a \sin 120^\circ}{17}$$

$$\frac{(17 \sin 45^\circ)}{\sin 120^\circ} = \frac{a \sin 120^\circ}{\sin 120^\circ}$$

$$a = 13.9$$



$$A = 45^\circ \quad a = 13.9$$

$$B = 15^\circ \quad b = 5.1$$

$$C = 120^\circ \quad c = 17$$

$$17 \frac{\sin 15^\circ}{b} = \frac{b \sin 120^\circ}{17}$$

$$\frac{17 \sin 15^\circ}{\sin 120^\circ} = \frac{b \sin 120^\circ}{\sin 120^\circ}$$

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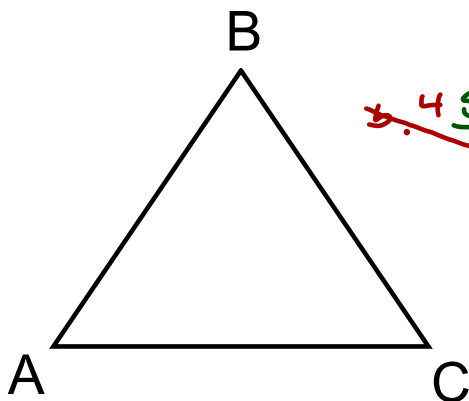
Solve the triangle.

$$A = 50^\circ, B = 62^\circ, a = 4$$

$$A = 50^\circ \quad a = 4$$

$$B = 62^\circ \quad b = 4.6$$

$$C = 68^\circ \quad c = 4.8$$



$$4 \frac{\sin 62^\circ}{b} = \frac{b \sin 50^\circ}{4}$$

$$\frac{4 \sin 62^\circ}{\sin 50^\circ} = \frac{b \sin 50^\circ}{\sin 50^\circ}$$

$$c = \frac{4 \sin 68^\circ}{\sin 50^\circ}$$

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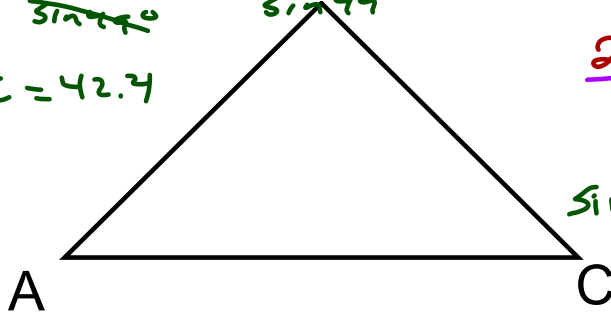
Solve the triangle.

$$A = 49^\circ, a = 32, b = 28$$

$$\frac{c \sin 49^\circ}{32} = \frac{32 \sin 89.7^\circ}{c}$$

$$\frac{c \sin 49^\circ}{\sin 49^\circ} = \frac{32 \sin 89.7^\circ}{\sin 49^\circ}$$

$$c = 42.7$$



$$A = 49^\circ \quad a = 32$$

$$B = 41.3^\circ \quad b = 28$$

$$C = 89.7^\circ \quad c = 42.7$$

$$28 \frac{\sin 49^\circ}{32} = \frac{32 \sin B}{28}$$

$$\frac{28 \sin 49^\circ}{32} = \frac{32 \sin B}{32}$$

$$\sin^{-1} .66 = \sin B$$

$$B = 41.3^\circ$$

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