

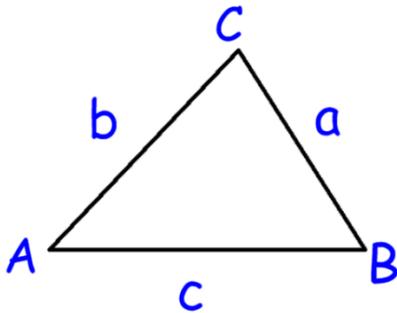
Name:

Date:

### Sine Law Worksheet

Make sure your calculator is in the proper mode - degrees (deg).  
Diagrams are not to scale!

1. Use the diagram below to fill in the blanks and complete the Sine Law.



The Sine Law

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

2. Solve for the given variable in each of the following. Round side lengths to one decimal place and angles to the nearest whole degree.

$$\frac{a}{\sin 35^\circ} = \frac{10}{\sin 40^\circ}$$

$$a = \frac{10 \times \sin 35^\circ}{\sin 40^\circ}$$

$$a = 8.9$$

$$\frac{65}{\sin 75^\circ} = \frac{b}{\sin 48^\circ}$$

$$b = \frac{65 \times \sin 48^\circ}{\sin 75^\circ}$$

$$b = 50.0$$

$$\frac{75}{\sin 55^\circ} = \frac{c}{\sin 80^\circ}$$

$$c = \frac{75 \times \sin 80^\circ}{\sin 55^\circ}$$

$$c = 90.2$$

$$\frac{36}{\sin B} = \frac{25}{\sin 25^\circ}$$

$$\frac{\sin B}{36} = \frac{\sin 25^\circ}{25}$$

$$\sin B = \frac{36 \times \sin 25^\circ}{25}$$

$$\sin B = 0.6046$$

$$B = 37^\circ$$

$$\frac{50}{\sin C} = \frac{42}{\sin 60^\circ}$$

$$\frac{\sin C}{50} = \frac{\sin 60^\circ}{42}$$

$$\sin C = \frac{50 \times \sin 60^\circ}{42}$$

$$\sin C = 1.0310$$

IMPOSSIBLE

$$\frac{8}{\sin B} = \frac{37}{\sin 78^\circ}$$

$$\frac{\sin B}{8} = \frac{\sin 78^\circ}{37}$$

$$\sin B = \frac{8 \times \sin 78^\circ}{37}$$

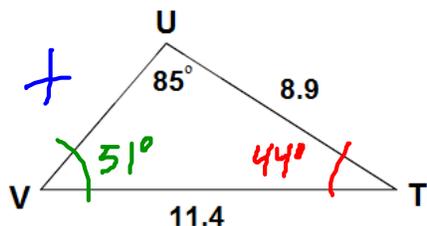
$$\sin B = 0.2115$$

$$B = 12^\circ$$

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3. "Solve" the triangle below (find the values of all missing sides and angles).



$$\frac{\sin V}{8.9} = \frac{\sin 85}{11.4}$$

$$\sin V = \frac{8.9 \times \sin 85}{11.4}$$

$$\sin V = 0.7777$$

$$V = 51^\circ$$

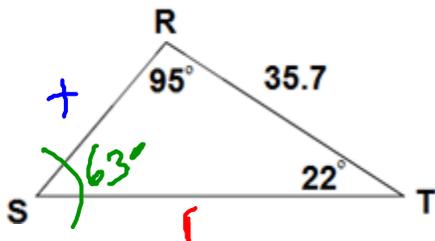
$$T = 180 - 51 - 85 = 44^\circ$$

$$\frac{+}{\sin 44^\circ} = \frac{11.4}{\sin 85^\circ}$$

$$+ = \frac{11.4 \times \sin 44^\circ}{\sin 85^\circ}$$

$$+ = 7.9$$

4. "Solve" the triangle below (find the values of all missing sides and angles).



$$S = 180 - 95 - 22 = 63^\circ$$

$$\frac{+}{\sin 95} = \frac{35.7}{\sin 63}$$

$$+ = \frac{35.7 \times \sin 95}{\sin 63}$$

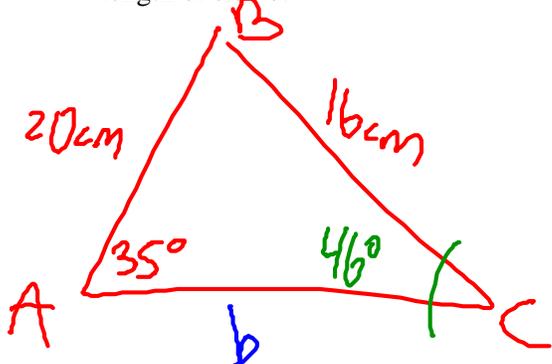
$$+ = 39.9$$

$$\frac{+}{\sin 22} = \frac{35.7}{\sin 63}$$

$$+ = \frac{35.7 \times \sin 22}{\sin 63}$$

$$+ = 15.0$$

5. In triangle ABC, angle A = 35 degrees, side a = 16 cm and side c = 20 cm. Draw a diagram and find the length of side b.



First find C

$$\frac{\sin C}{20} = \frac{\sin 35}{16}$$

$$\sin C = \frac{20 \times \sin 35}{16}$$

$$\sin C = 0.7170$$

$$C = 46^\circ$$

$$\angle B = 180 - 35 - 46 = 99^\circ$$

$$\frac{b}{\sin 99^\circ} = \frac{16}{\sin 35}$$

$$b = \frac{16 \times \sin 99}{\sin 35}$$

$$b = 27.6$$