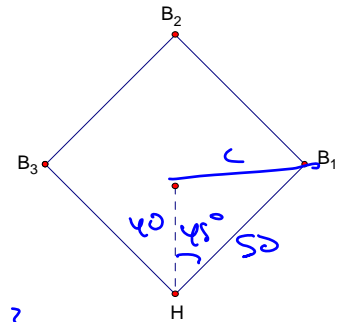


All questions answered to the nearest 0.01; supply diagrams for problems that don't have them.

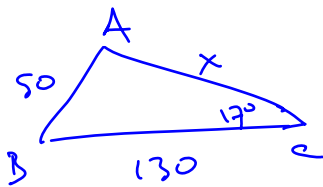
1. On a T-ball field, the bases are only 50 feet apart, and the "pitcher" stands on a mound 40 feet from home plate. How far is the "pitcher" from first base?

$$c^2 = 40^2 + 50^2 - 2 \cdot 40 \cdot 50 \cdot \cos 45^\circ$$

$$c = \sqrt{4100 - 2000\sqrt{2}} \approx 39.66 \text{ ft}$$



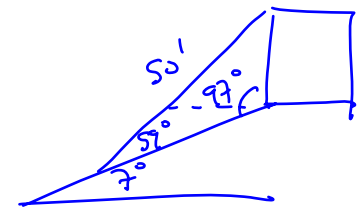
2. In $\triangle ABC$, $AB = 50$, $BC = 130$, and $m\angle C = 17^\circ$. Find all possible values for AC .



$$130^2 + x^2 - 2 \cdot x \cdot \cos 17^\circ = 50^2$$

Solve on Nspire: $x = 91.83$ or $x = 156.81$

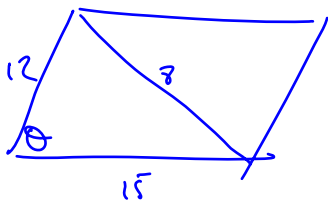
3. A hill slopes upward at an angle of elevation of 7° . A 50-foot ladder leans against a building at the top of the hill; the ladder makes an angle of 59° with the hill. How high up the building does the ladder reach? Mr. K can help you with the diagram for a 1-point deduction.



$$\frac{50}{\sin 97^\circ} = \frac{x}{\sin 59^\circ} \Rightarrow x = \frac{50 \sin 59^\circ}{\sin 97^\circ}$$

$$\approx 43.18'$$

4. A parallelogram has sides of length 12 and 15, and one diagonal of length 8. Find the measure of one of the parallelogram's obtuse angles.



$$12^2 + 15^2 - 2 \cdot 12 \cdot 15 \cdot \cos \theta = 8^2$$

$$\cos \theta = \frac{305}{360}$$

$$\theta = \cos^{-1}\left(\frac{305}{360}\right) \approx 32.09^\circ$$

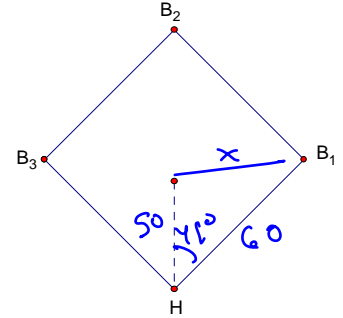
Need obtuse \angle $180^\circ - 32.09^\circ = 147.91^\circ$

All questions answered to the nearest 0.01; supply diagrams for problems that don't have them.

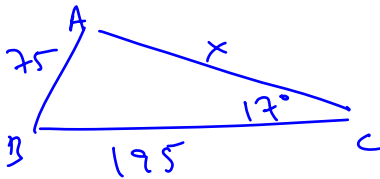
1. On a T-ball field, the bases are only 60 feet apart, and the "pitcher" stands on a mound 50 feet from home plate. How far is the "pitcher" from first base?

$$x = \sqrt{60^2 + 50^2 - 2 \cdot 60 \cdot 50 \cdot \cos 45^\circ}$$

$$\approx 47.10 \text{ ft.}$$



2. In $\triangle ABC$, $AB = 75$, $BC = 195$, and $m\angle C = 17^\circ$. Find all possible values for AC .



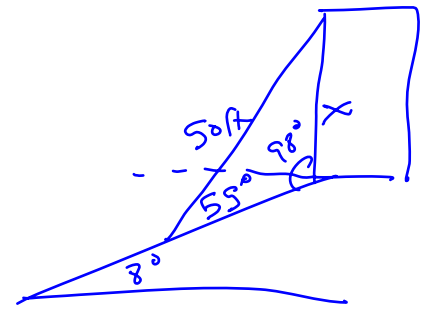
$$75^2 = x^2 + 195^2 - 2 \cdot x \cdot 195 \cdot \cos 17^\circ$$

$$\Rightarrow x \approx 137.75 \text{ or } x \approx 235.21$$

3. A hill slopes upward at an angle of elevation of 8° . A 50-foot ladder leans against a building at the top of the hill; the ladder makes an angle of 55° with the hill. How high up the building does the ladder reach? Mr. K can help you with the diagram for a 1-point deduction.

$$\frac{x}{\sin 55^\circ} = \frac{50}{\sin 98^\circ} \Rightarrow x = \frac{50 \sin 55^\circ}{\sin 98^\circ}$$

$$x \approx 41.36 \text{ ft}$$



4. A parallelogram has sides of length 12 and 15, and one diagonal of length 8. Find the measure of one of the parallelogram's obtuse angles.