

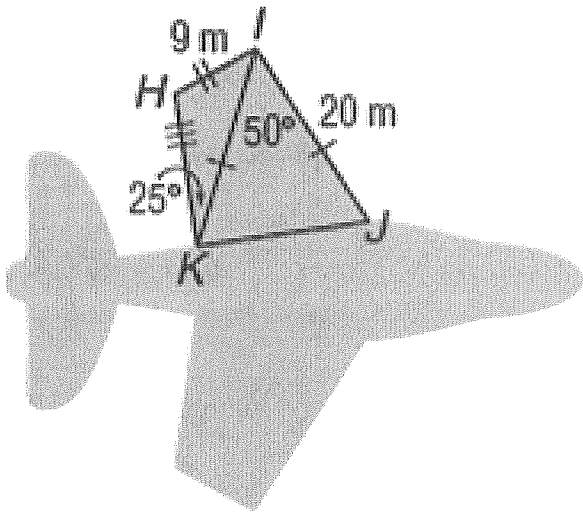
Name: _____

Hour: _____

Law of Sines and Cosines In Class Practice

Directions: Round to the nearest tenth if needed.

1. **AIRCRAFT** From the diagram of the airplane shown, determine the approximate exterior perimeter of each wing. Round to the nearest tenth meter.



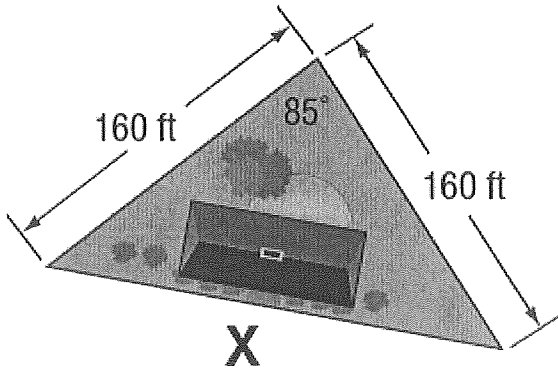
2. Mrs. Burge is planting a raspberry garden in the shape of a triangle to pay homage to her favorite subject in school. The side lengths are as follows: 50 feet, 60 feet, 100 feet. Mr. Giannini wants to find the measure of the largest angle. Help him!!! ☹

Name: _____

Hour: _____

3. **REAL ESTATE** A house is built on a triangular plot of land. Two sides of the plot are 160 feet long, and they meet at an angle of 85° . If a fence is to be placed along the perimeter of the property, how much fencing material is needed?

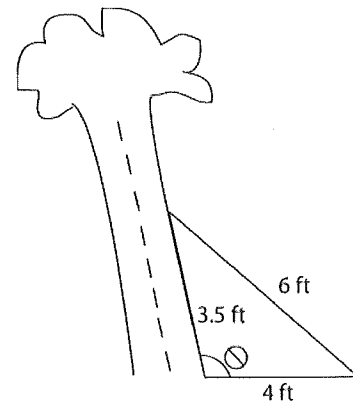
X = _____



We need _____

Amount of fencing.

4. After the hurricane, the small tree in Mrs. Gross' neighbor's yard was leaning as she was hunkered down in her house. To keep it from falling, she nailed a 6-foot strap into the ground 4 feet from the base of the tree. She attached the strap to the tree 3.5 feet above the ground. How far from vertical was the tree leaning?



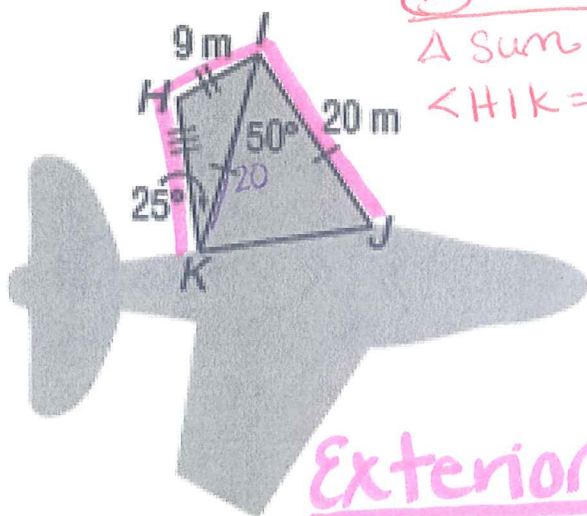
Name: Key

Hour: _____

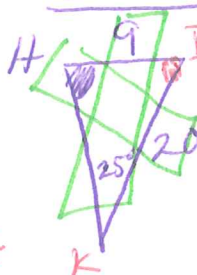
Law of Sines and Cosines In Class Practice

Directions: Round to the nearest tenth if needed.

1. **AIRCRAFT** From the diagram of the airplane shown, determine the approximate exterior perimeter of each wing. Round to the nearest tenth meter.



① Find $\angle H$ 1st Law of Sines



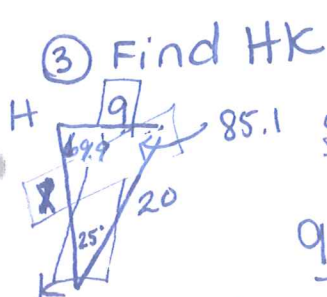
$$\frac{\sin H}{20} = \frac{\sin(25)}{9}$$

$$\sin H = \frac{20 \cdot \sin(25)}{9}$$

$$\angle H = \sin^{-1}\left(\frac{20 \cdot \sin(25)}{9}\right)$$

$\angle H = 69.9^\circ$

② Find $\angle HIK$
 Δ Sum
 $\angle HIK = 85.1^\circ$



③ Find HK

$$\frac{\sin(85.1)}{x} = \frac{\sin(25)}{9}$$

$$9 \sin(85.1) = x \sin(25)$$

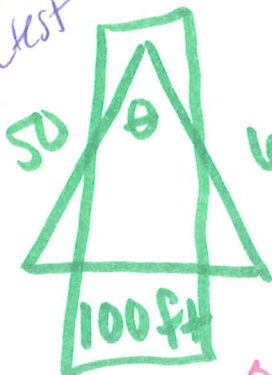
$x = 21.2$

Exterior Perimeter

$P = 21.2 + 9 + 20$
 $P = 50.2 \text{ m}$

2. Mrs. Burge is planting a raspberry garden in the shape of a triangle to pay homage to her favorite subject in school. The side lengths are as follows: 50 feet, 60 feet, 100 feet. Mr. Giannini wants to find the measure of the largest angle. Help him!!! ☺

Opposite the greatest angle is the greatest side.



$$100^2 = 60^2 + 50^2 - 2 \cdot 60 \cdot 50 \cos \theta$$

$$10000 = 3600 + 2500 - 6000 \cos \theta$$

$$10,000 = 6,100 - 6000 \cos \theta$$

$$\frac{3,900}{-6000} = \frac{-6,000 \cos \theta}{-6000}$$

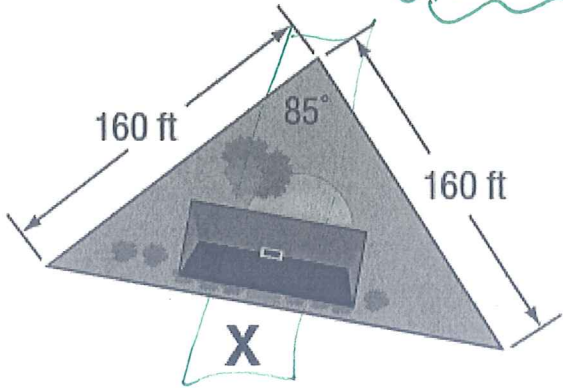
$$\theta = \cos^{-1}\left(\frac{3900}{-6000}\right)$$

The largest angle is 130.5°

3. **REAL ESTATE** A house is built on a triangular plot of land. Two sides of the plot are 160 feet long, and they meet at an angle of 85° . If a fence is to be placed along the perimeter of the property, how much fencing material is needed?

$X = \underline{216.2 \text{ ft}}$

Law of Cosines



We need 536.2 ft
(Amount of fencing.)

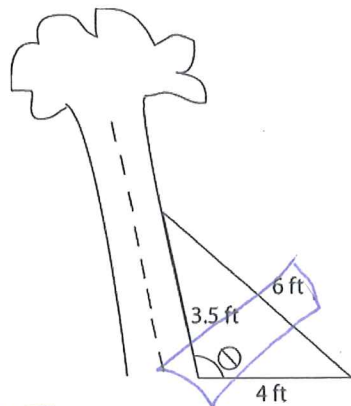
$$X^2 = 160^2 + 160^2 - 2 \cdot 160 \cdot 160 \cos(85^\circ)$$

$$X^2 = 46737.626$$

$$X \approx 216.2$$

4. After the hurricane, the small tree in Mrs. Gross' neighbor's yard was leaning as she was hunkered down in her house. To keep it from falling, she nailed a 6-foot strap into the ground 4 feet from the base of the tree. She attached the strap to the tree 3 1/2 feet above the ground. How far from vertical was the tree leaning?

Law of Cosines



$$6^2 = 3.5^2 + 4^2 - 2 \times 3.5 \cdot 4 \cos \theta$$

$$36 = 28.25 - 28 \cos \theta$$

$$\frac{7.75}{-28} = \frac{-28 \cos \theta}{-28}$$

$$\cos \theta = \frac{7.75}{-28}$$

$$\theta = \cos^{-1}\left(\frac{7.75}{-28}\right)$$

$$\theta = 106.1^\circ$$

$\therefore 106.1 - 90$
16.1° from Vertical