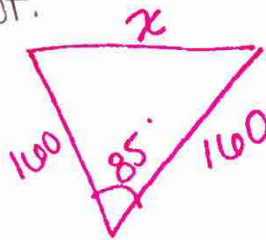


# Application Examples

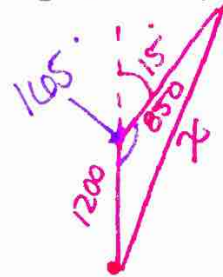
1. A triangular lot faces two streets that meet at angle measuring  $85^\circ$ . The sides of the lot facing the streets are 160 ft in length. Find the perimeter of the lot.



$$x^2 = 160^2 + 160^2 - 2(160)(160)\cos 85$$

$$x = 216.2 \text{ ft}$$

2. A plane flew 1200 km north. It then changed direction by turning  $15^\circ$  clockwise and flew for another 850 km. How far was the plane from its starting point?

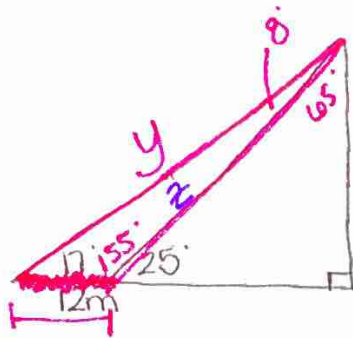


$$x^2 = 1200^2 + 850^2 - 2(1200)(850)\cos 105$$

$$x = 2032.98 \text{ km}$$

3. Solve for  $x$

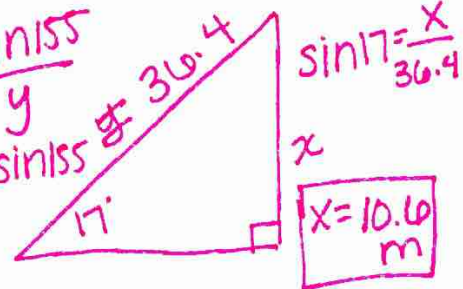
$$\frac{\sin 8}{12} = \frac{\sin 17}{x}$$



$$\frac{\sin 8}{12} = \frac{\sin 155}{y}$$

$$y \sin 8 = 12 \cdot \sin 155$$

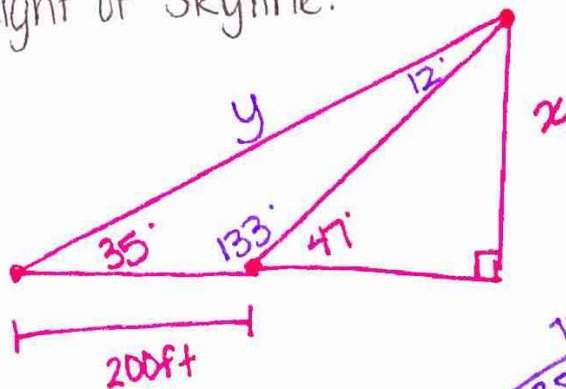
$$y = 36.4$$



$$\sin 17 = \frac{x}{36.4}$$

$$x = 10.6 \text{ m}$$

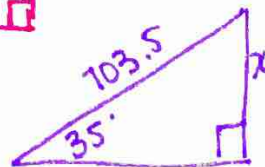
4. As a class, you are trying to measure the height of Skyline H.S. At your first point, the angle of elevation to the top of the building is  $47^\circ$ , then you move 200 ft back and the angle of elevation is  $35^\circ$ . Find the height of Skyline.



$$\frac{\sin 12}{200} = \frac{\sin 133}{y}$$

$$y \cdot \sin 12 = 200 \sin 133$$

$$y = 703.5$$



$$\sin 35 = \frac{x}{703.5}$$

$$x = 403.5 \text{ ft}$$