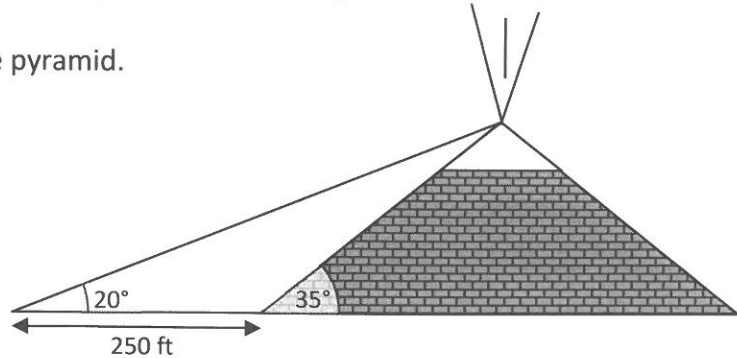


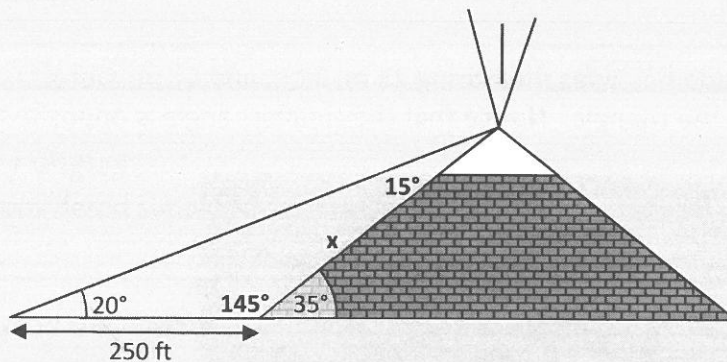
Example 5

The Luxor hotel in Las Vegas is shaped like a pyramid with a bright light beacon shooting out of the top. Cynthia is a contractor who wants to bid on a contract washing the exterior of the building. She needs to know the length from the tip of the pyramid to a point on the base. The angle of elevation from Cynthia to the top of the pyramid is 20° . She is standing at a point that is 250 ft from the base of the pyramid. The outer wall of the pyramid makes an angle of 35° with the ground.

Calculate the length of the exterior wall of the pyramid.



In this example, we only have ONE angle and ONE side (of the given triangle). However, we can use our knowledge of *supplementary angles* to help us. The largest angle in the left hand triangle would be: $180^\circ - 35^\circ = 145^\circ$. That makes the top angle (beside the tip of the pyramid) $180^\circ - 20^\circ - 145^\circ = 15^\circ$. That gives us this diagram:



This is a sine law problem, as we have partners (15° and 250 ft).

$$\frac{250}{\sin 15^\circ} = \frac{x}{\sin 20^\circ}$$
$$x = 250 \times \sin 20^\circ \div \sin 15^\circ$$

$$x = 330.37 \text{ ft}$$