

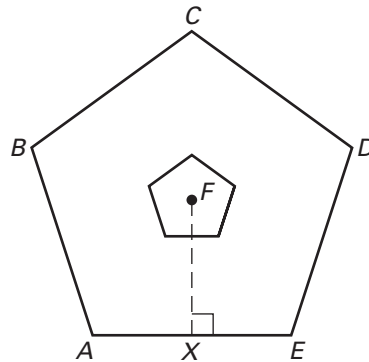
Real-Life Application: When Will I Ever Use This?

For use with pages 669–675

Pentagon Building

The Pentagon Building, headquarters of the Department of Defense of the United States government, is one of the world's largest office buildings. The building lies just across the Potomac River from Washington, D.C. in Arlington, Virginia.

The building was constructed by army engineers and was completed in 1943. The Pentagon has approximately 23,000 employees and is virtually a city in itself with private restaurants, a bank, heliport, and a television station. It was built in the shape of a pentagon with each outer wall having a length of 921 feet. The polygon $ABCDE$ shown below represents the outer edge of the building with point F as its center. The smaller pentagon represents the courtyard that lies within the Pentagon Building.



1. What is the perimeter of the Pentagon Building?
2. What is the measure of the central angle $\angle AFE$? What type of triangle is $\triangle AFE$?
3. Find the length of \overline{XF} . Round your result to one decimal place.
4. Find the total area of the Pentagon building. Round your result to one decimal place.
5. Suppose the inner pentagon that represents the courtyard has a side length of approximately 307 feet. What is the approximate ratio of its area compared to the area of the entire Pentagon?