**Geometric Shapes in Architecture**

by  Lauretta J. Fox

Man has always needed shelter. In the earliest days men were nomads whose main occupations were hunting and fishing. In order to survive they moved from place to place very frequently. They were content to live in caves and other temporary shelters. With the advent of agriculture, men were able to settle in more permanent locations, and they built lasting structures to use as homes. It was then that architecture came into being.

As years passed, man’s knowledge grew and principles of construction improved. No longer were men satisfied to build houses alone. Now they designed tombs in which to be buried, monuments to serve as memorials, palaces to house the rulers, and churches where they could worship their gods. To produce structures that were functional as well as models of architectural beauty, designers had to apply principles of mathematics in their work. Proper ratios and proportions related each feature of a building with every other one and with the whole structure. Various geometric shapes provided maximum use as well as a pleasing appearance in all types of architecture.

At the present time, many school children in New Haven are unaware of the relation between the mathematics studied in their classrooms and the architecture that surrounds them throughout the city. They shop in the Chapel Square Mall without noticing the simple lines and planes that form the pattern of the building. On their way to concerts in the Veterans’ Memorial Coliseum, they pass the Supreme Headquarters of the Knights of Columbus and refer to its cylindrical columns as “tootsie rolls.” The Ingalls rink, commonly known as “the whale,” stirs up lively conversations about ice skating and hockey without any thought that the backbone of “the whale” is a perfect sine curve. Many Saturday afternoons are spent enjoying football in the elliptical stadium known as Yale Bowl. History students, who visit the graves of notable men in Grove Street Cemetery, seem to be oblivious of the fact that the lovely entrance gate is a trapezoid. When they are visiting friends’ homes, young people are too busy to see the wide variety of geometric shapes and designs that abound both outside and inside

Another very familiar polygon used in architecture is the quadrilateral. Ceilings, floors, walls, windows and doors usually are quadrilaterals. A *quadrilateral* is a polygon with four sides. The most common quadrilaterals are the parallelogram, rectangle, square, rhombus, and trapezoid.