# N-gon with the Maximum Area for Equal Length of Perimeter

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This project proposes an alternative approach to proof that a regular n-gon has the maximum area when compare to other irregular n-gons with perimeters of the same length using mathematical induction, interior and exterior angles. The main objective of this paper is to show that we can use mathematical induction to show that the area of a regular n-gon is maximum when compare to other irregular n-gons with perimeter of the same length. The proof starts from the base case by showing that an equilateral triangle has the maximum area when compared to other triangles. Next, it shows that this is also true for any regular n-gons and finally it is true for any regular (n+1)- gons. As a consequence, it can be proven that as n tends to infinite, a regular n-gon becomes a circle and has the maximum area among all other polygons. Keywords: Maximum area of a regular n-gon, Area of regular/irregular n-gons by interior and exterior angles.

**Awards Won:**