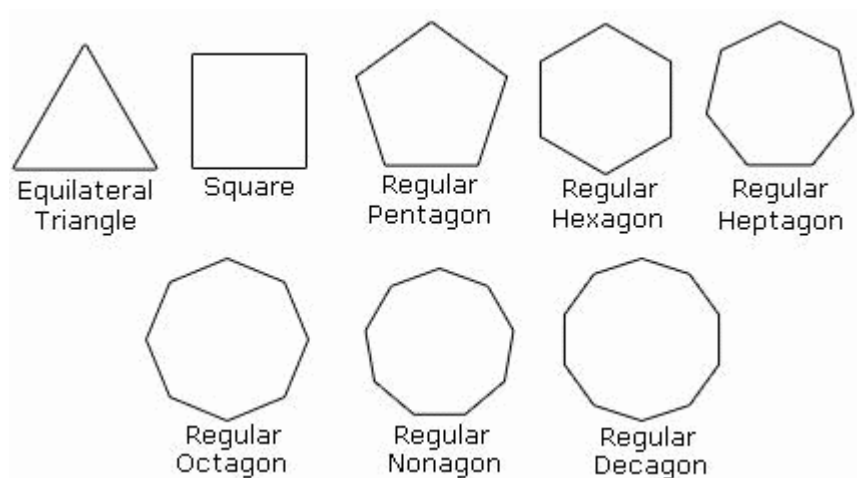
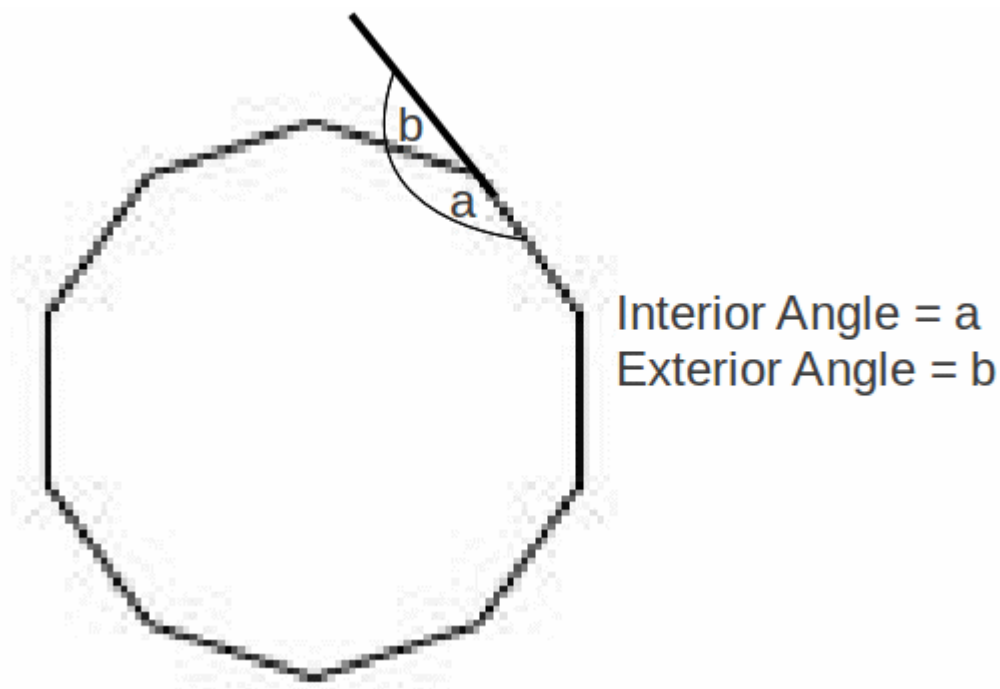


Angles in a Regular Polygon

The first seven regular polygons are shown below.



All the sides in a regular polygon are the same length and the interior angles are all the same. For a triangle they are all 60 degrees, for a square 90 degrees, for a pentagon 108 degrees... The external angles – the angle between a side and an adjacent side extended – are all 180 minus the internal angle, because we can extend each side so that both angles are on a straight line so add to 180 degrees. This is shown below.



As the perimeter is traced out, each time the end of an edge is reached, an angle b is turned through. If the polygon has n sides, there will be n turnings. When the starting point is reached again, there has been one complete turn – an angle of 360

degrees, so that $nb = 360$ degrees. Dividing by n gives $b = \frac{360}{n}$ degrees. The interior angle a can then be found by subtracting this from 180 degrees: $a = 180 - \frac{360}{n}$. Adding up all n interior angles gives $n(180 - \frac{360}{n}) = 180(n - 2)$.

