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Geometry

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Polygon Internal Angles Theorem

The sum of the internal angles of a polygon is related to the number of its sides by the formula $S = (n - 1)180°$. The proof depends on the division of the polygon into triangles, each of which has an interior angle sum of 180°, as shown in Figure 1.

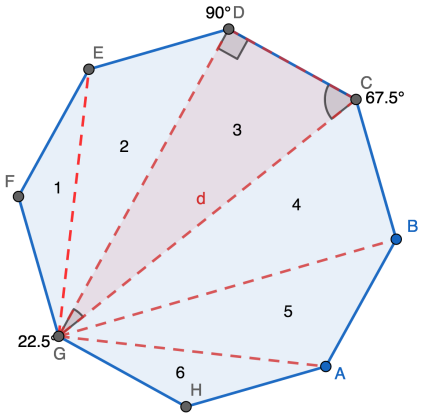

Figure 1: Octagon showing partition into 6 triangles.

The initial pattern of polygon sides versus the sum of angle measures is shown in Table 1.

n	m<	Sum of angles
3	60	180
4	90	360
5	108	540
6	120	720
n	$m<V=\frac{(n-2)180}{n}$	S=(n-2)180