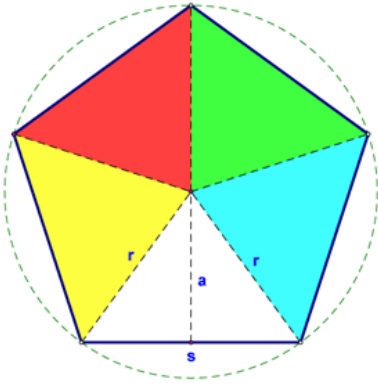


Polygons Summary

<p>These figures are not polygons These figures are polygons</p>	<p><u>Polygon</u></p> <p>A closed figure formed by line segments that only intersect each other at the endpoints</p>
<p>Interior Angle Exterior Angle</p>	<p><u>Angles of a Polygons</u></p> <p>Interior Angle: The angle inside the polygon</p> <p>Exterior Angle: The angle supplementary to a given interior angle</p>
<p>Convex Has no interior angle greater than 180°</p> <p>Irregular Does not have congruent sides and interior angles</p> <p>Concave Has 1 interior angle greater than 180°</p> <p>Regular Has congruent sides and interior angles</p>	<p><u>Classification of Polygons</u></p> <ul style="list-style-type: none"> • Convex: All interior angles are less than 180 degrees • Concave: Has an interior angle greater than 180 degrees • Regular: All sides are congruent • Irregular: Not regular
<p>quadrilateral pentagon</p> <p>hexagon heptagon octagon</p>	<p><u>Sum of Angles in a Convex Polygon:</u></p> <p>Sum of Interior Angles: If n is the number of sides of a given polygon, then the sum of the interior angles is $(n - 2)(180)$</p> <p>Sum of Exterior Angles: 360 degrees ... ALWAYS</p>
	<p><u>Angles in a Regular Polygon</u></p> <p><i>This is only true when the polygon is regular!</i></p> <p>Interior Angle: If n is the number of sides of a given regular polygon, then the measure of EACH interior angle is</p> $\text{Interior angle} = \frac{(n - 2)(180)}{n}$ <p>Exterior Angle = $\frac{360}{n}$</p>

Polygons Summary



Area and Perimeter of Polygons

The **apothem** is also the height of each triangle,
 Area of $\Delta = \frac{1}{2} (\text{apothem})(\text{side})$

All triangles shown are congruent, so we multiply by n .

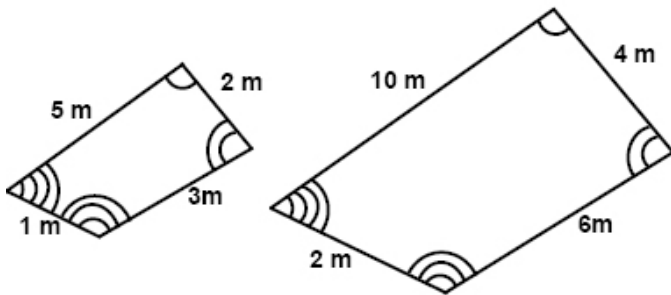
Area of Polygon = $n (\frac{1}{2} \text{apothem}) (\text{side})$

$n (\text{side}) = \text{perimeter of polygon}$

Area of Polygon = $\frac{1}{2} (\text{apothem}) (\text{perimeter})$

WARNING: *If you are given the radius instead of the apothem, use the Pythagorean Theorem.*

$$a^2 + \left(\frac{s}{2}\right)^2 = r^2$$



Similar Polygons

Polygons with the same shape but not the same size are *similar*. All their corresponding angles must be congruent, and all of their corresponding sides are proportional.