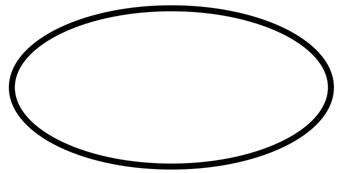
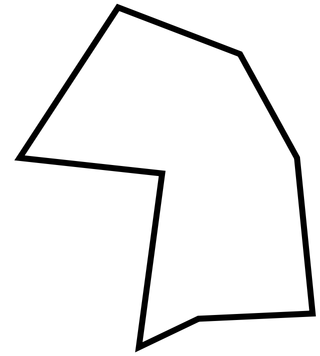
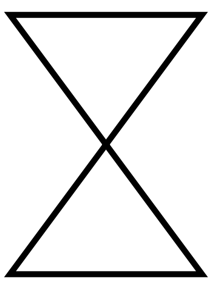
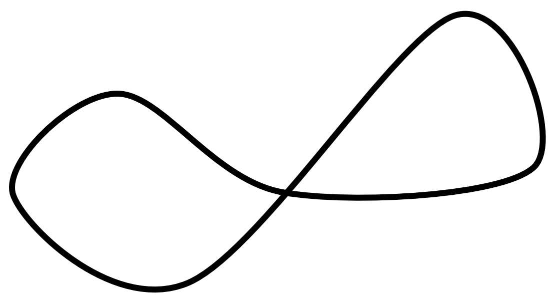
<u>Simple Closed Curve:</u>

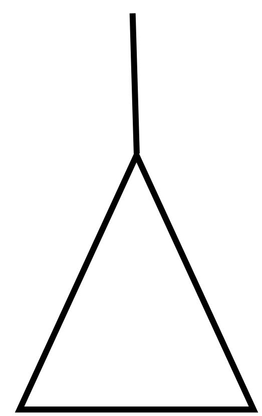
It’s a curve in the plane that can be traced with the same starting and stopping point without crossing or retracing any part of the curve.





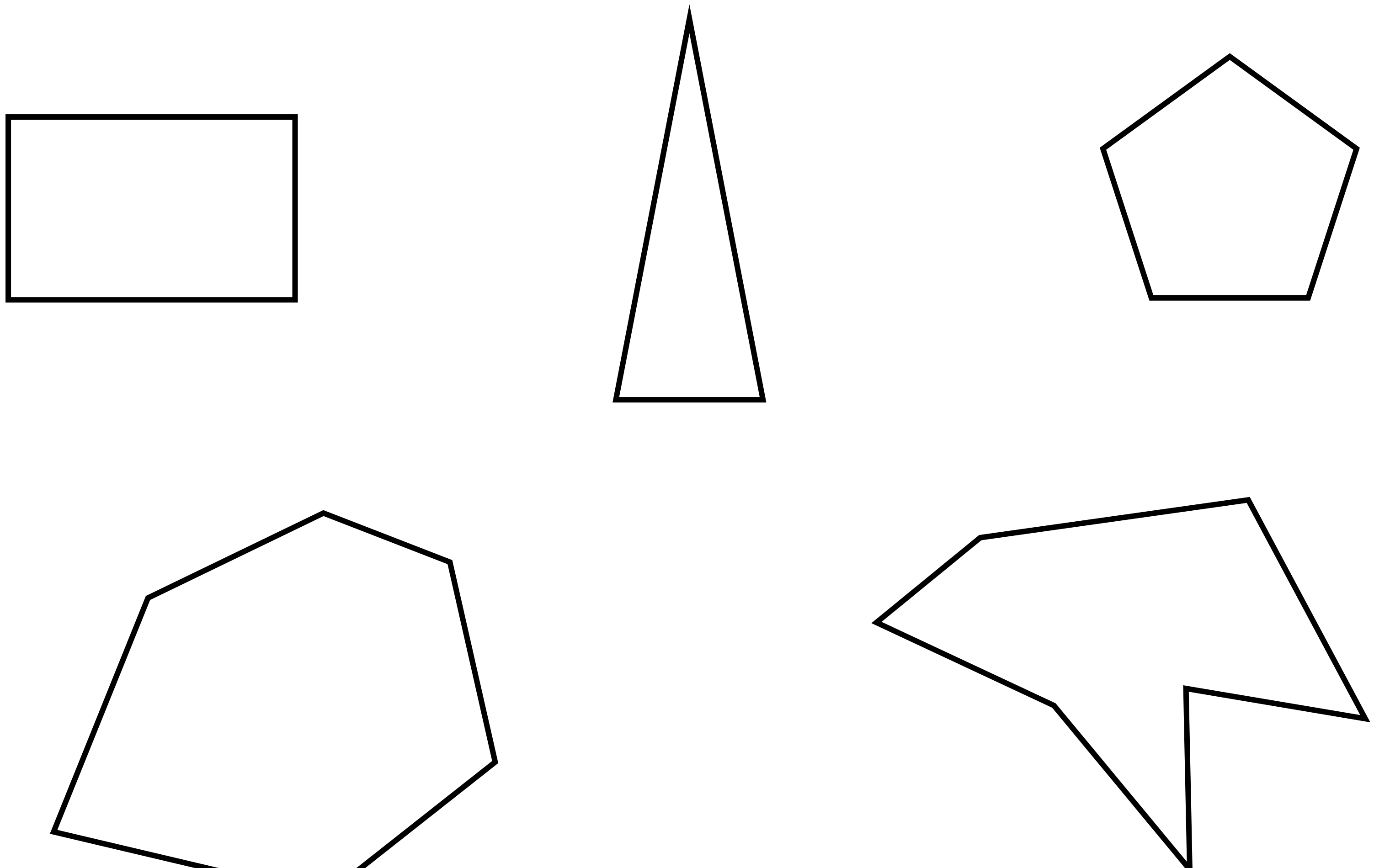






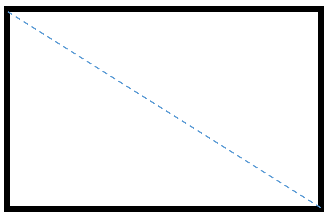
Polygon:

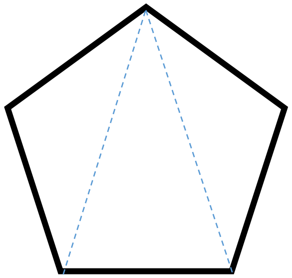
It's a simple closed curve made up of line segments.

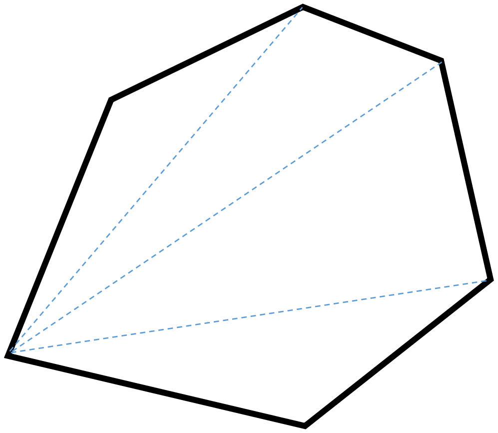


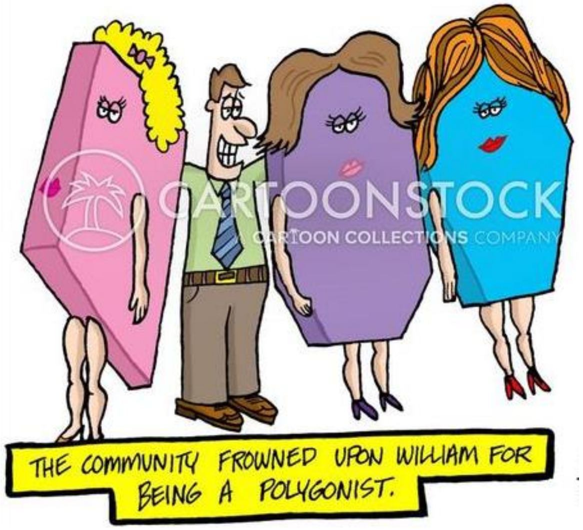
The Angle Sum of a Polygon:

The angle sum of a polygon can be determined by dissecting it into triangles and using the angle sum of a triangle.

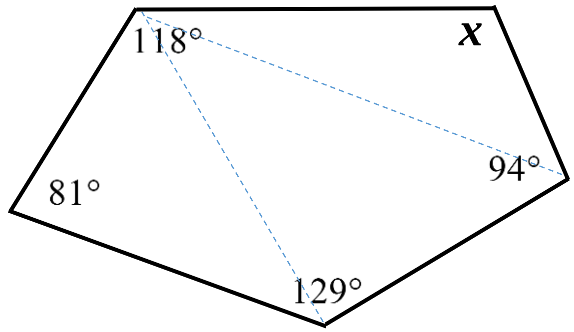


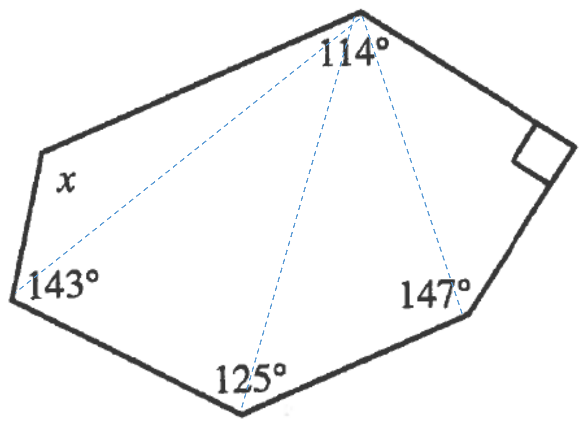


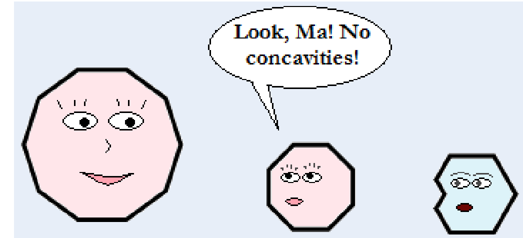




Find the missing angle measure in the following polygons.

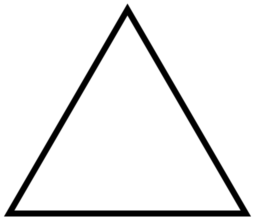






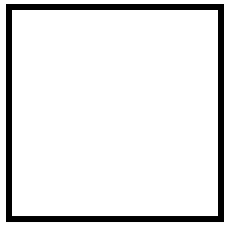
<u>Regular Polygon/Regular *n*-gon:</u>

It's a polygon with all sides of the same length and all vertex angles of the same measure. The *n* refers to the number of sides, and all of them enclose a convex region.



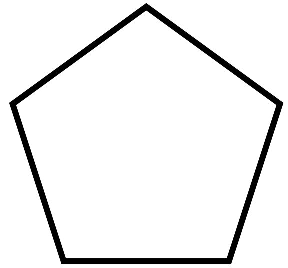
3-gon

equilateral triangle



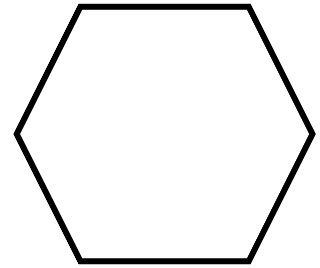
4-gon

square



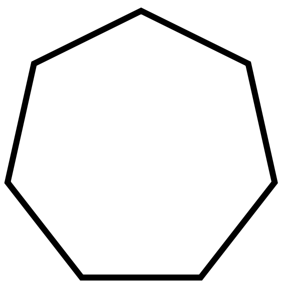
5-gon

regular pentagon



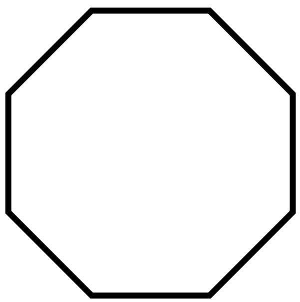
6-gon

regular hexagon



7-gon

regular heptagon

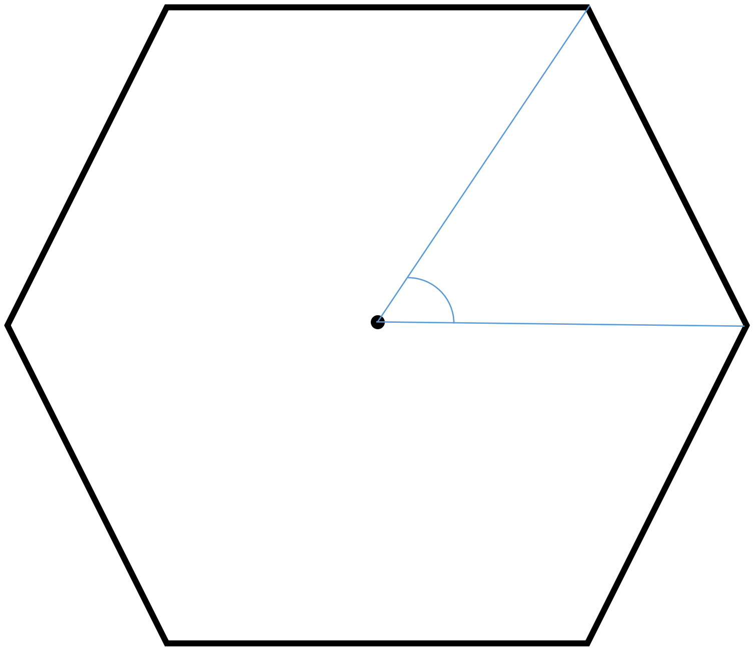


8-gon

regular octagon

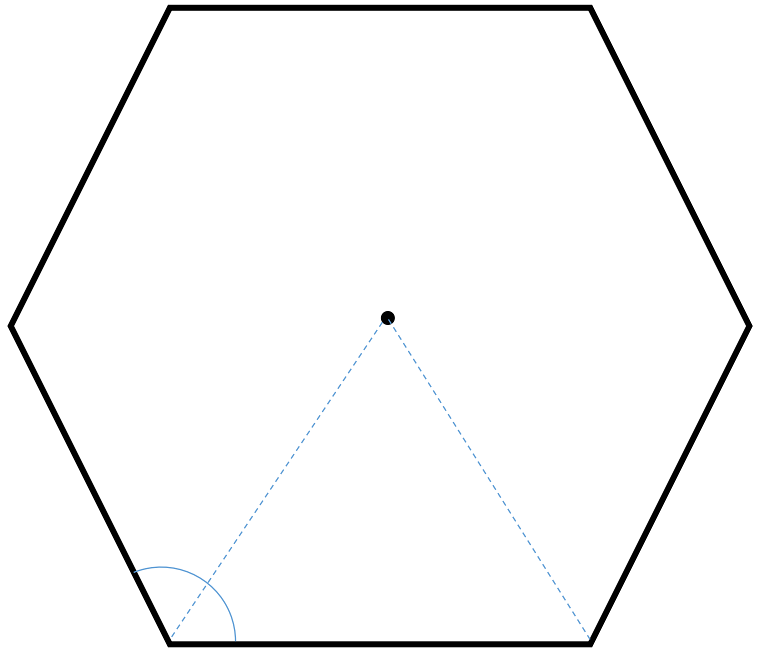
The Angles of a Regular n-gon:

Central Angle:



Since it takes *n* central angles to get $360°$**,** $\text{central angle} = \dfrac{360°}{n}$**.**

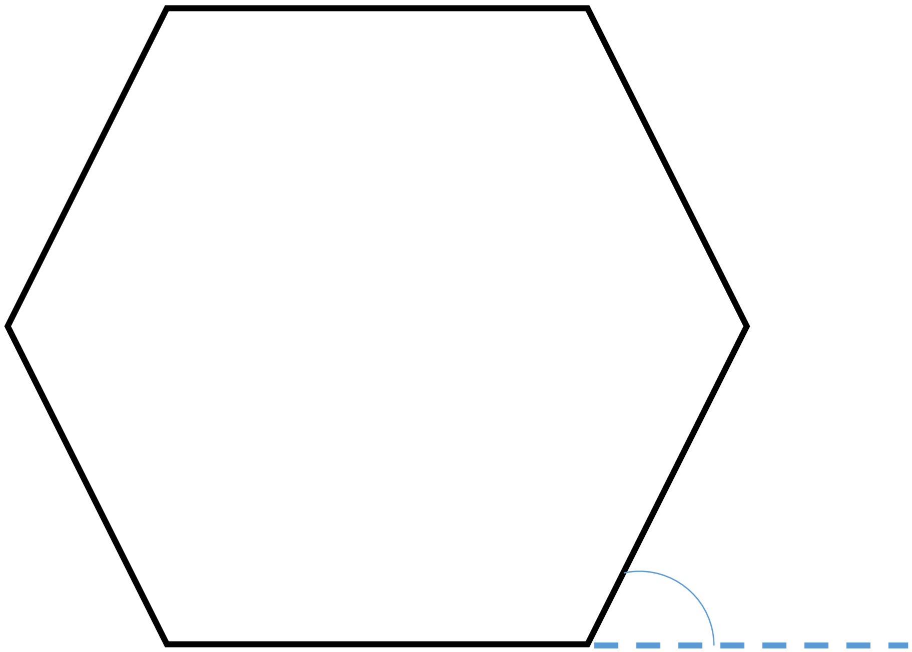
<u>Vertex Angle:</u>



Since a central angle and a vertex angle give $180°$**,** $\text{vertex angle} = 180° - \dfrac{360°}{n}$**, or**

$\text{vertex angle} = \dfrac{180°n - 360°}{n} = \dfrac{(n-2)180°}{n}$**.**

<u>Exterior Angle:</u>



Since vertex angle and exterior angle give $180°$**, and vertex angle and central angle give** $180°$**, then exterior angle equals central angle.**

$$\text{exterior angle} = \frac{360°}{n}$$

<u>Angle Sum of a Regular *n*-gon:</u>

Since the measure of a vertex angle of a regular *n*-gon is $\frac{(n-2)180°}{n}$**, and there are *n* of them in the regular *n*-gon, the angle sum must be** $n \cdot \frac{(n-2)180°}{n} = (n-2)180°$**.**

n	**central angle** $\frac{360°}{n}$	**vertex angle** $180° - \frac{360°}{n}$	**exterior angle** $\frac{360°}{n}$	**angle sum** $(n-2)180°$
3	120°	60°	120°	180°
4				
5				
6				

If a vertex angle of a regular *n*-gon is $162°$, then what's the value of *n*?

If an exterior angle of a regular *n*-gon is $45°$, then what's the value of *n*?

If a vertex angle of a regular *n*-gon is $150°$, then what's the measure of a central angle?