

$m\angle 1$	$m\angle 2$	$m\angle 3$	$m\angle 4$	$m\angle 5$	$m\angle 3 + m\angle 4 + m\angle 5$
60	40				
50	50				
81	37				
44	51				

Parallel Postulate: Given any line and a point not on the line, there is a line parallel to the given line through the given point.

Polygon: A connected, plane figure.


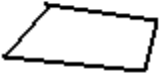
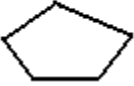

Triangle: A three-sided polygon.

Interior Angles of Polygons: Angles inside a polygon which are formed by two adjacent sides of the polygon.

Exterior Angles of Polygons: An angle outside a polygon which are formed by extending a side of the polygon.

Triangle Interior Angles Theorem: In a triangle, the sum of the measures of the interior angles is

Convex Polygon

Polygon	# sides	# triangles	Sum of Measures of Interior Angles
			
			
			
			
Heptagon			
n-gon			

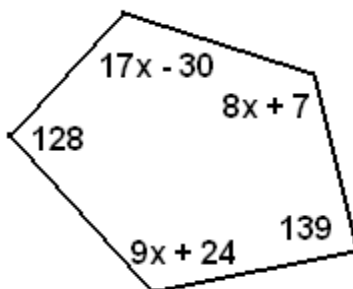
Concave Polygon

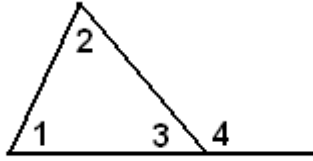
Sum of the Measures of the Interior Angles in an "n-sided" Polygon:

[EX1] Find the sum of the measures of the interior angles of a 132-gon.

[EX2] The sum of the measures of the interior angles of a polygon is 322,020 degrees. How many sides does the polygon have?

[EX3] Solve for x:





$m\angle 1$	$m\angle 2$	$m\angle 1 + m\angle 2$	$m\angle 3$	$m\angle 4$
30	70			
55	60			
80	37			
21	59			

Remote Interior Angles:

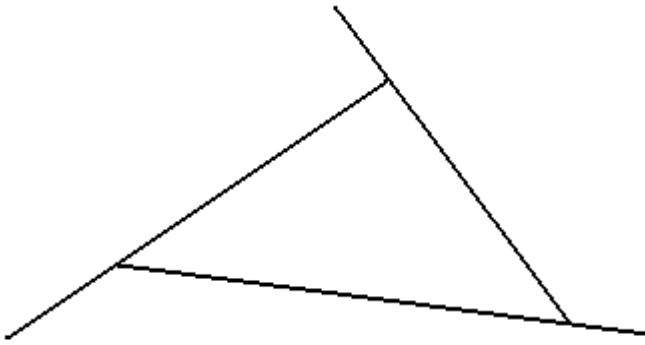
In a triangle, the interior angles that are nonadjacent to a given exterior angle.

Triangle Exterior Angles Theorem:

Given: Above Figure

Prove:

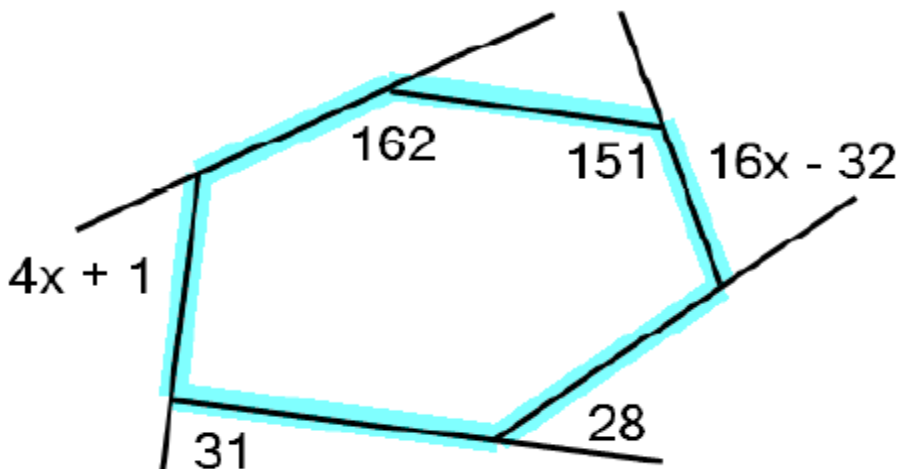
Polygon Exterior Angles Theorem:



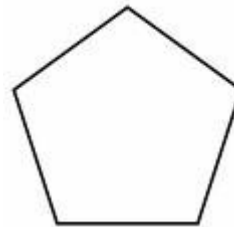
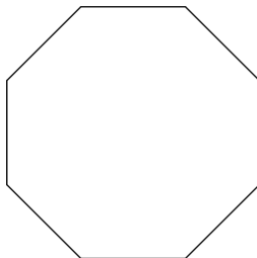
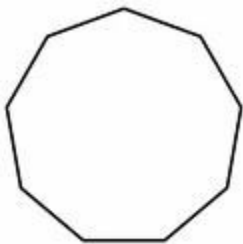
Polygon	# sides	Sum of Measures of Interior and Exterior Angles Combined	Sum of Measures of Interior Angles	Sum of Measures of Exterior Angles
Triangle				
Quad				
Pentagon				
Hexagon				
Heptagon				
Octagon				
n - gon				

[EX4] What is the sum of the measures of the exterior angles in a 2007-gon?

[EX5] Solve for x:



Regular Polygon: A polygon with all of its sides congruent and all of its angles congruent.



[EX 6] What is the measure of each interior angle in a regular octagon?

[EX 7] Each interior angle in a regular polygon measures 162 degrees; how many sides does it have?

**Measure of Each Interior Angle
in an n-sided Regular Polygon:**

**Measure of Each Exterior Angle
in an n-sided Regular Polygon:**

- 1.) What is the sum of the measures of the interior angles of a 135-gon?
- 2.) What is the sum of the measures of the interior angles of a 17-gon?
- 3.) If the sum of the measures of the interior angles of a polygon is 788.480, how many sides does it have?
- 4.) If each exterior angle of a regular polygon measures 15 degrees, how many sides does it have?
- 5.) If each interior angle of a regular polygon measures 172 degrees, how many sides does it have?

Sum of Interior Angles	Each Interior Angle in an n-sided Regular Polygon
Sum of Exterior Angles	Each Exterior Angle in an n-sided Regular Polygon

- 1.) What is the sum of the measures of the interior angles of a 135-gon?

- 2.) What is the sum of the measures of the interior angles of a 17-gon?

- 3.) If the sum of the measures of the interior angles of a polygon is 788,348, how many sides does it have?

- 4.) If each exterior angle of a regular polygon measures 15 degrees, how many sides does it have?

- 5.) If each interior angle of a regular polygon measures 172 degrees, how many sides does it have?