

6.1

Angles in Polygons

REVIEW

Triangle Sum Theorem



The ____ of all the ____ in a triangle is ____.



Triangle Exterior Angle Theorem

The measure of an exterior angle of a triangle is ____ to the ____ of the ____.

Exploring...

Open on the Sketchpad website the “6.1 – Polygon Interior Angles” sketch.

1) Before exploring the sketch, what is the sum of the interior angles in any triangle? _____

2) Complete the table according to the sketch:

(To show the number of triangles in each polygon, tap on “Show Clue.”)

Name	Sum of Angles	# of Sides	# of Triangles in a Polygon	Product of # of triangles X 180°
Quadrilateral		_____		
Pentagon				
Octagon				

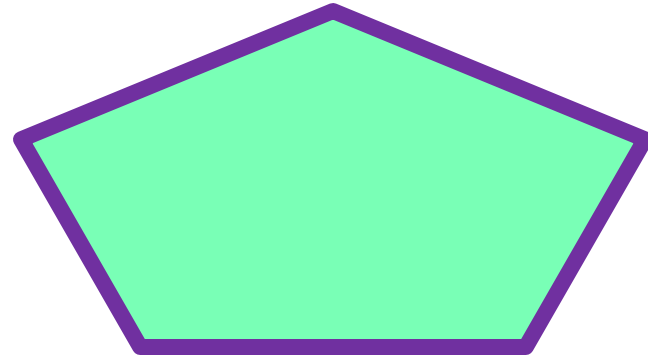
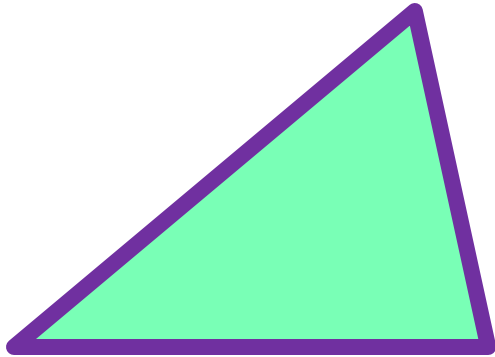
3) What's the relationship between the number of sides of a polygon and the number of triangles within a polygon?

Exploring...

- 4) What's the relationship between the interior angle sum of each polygon AND the product of the number of triangles and 180 degrees?
- 5) Try to figure out a formula to determine the sum of the interior angles of a polygon.
- 6) Complete the following:

Name	# of Sides	Sum of Angles
Hexagon		
Decagon		
16-gon		

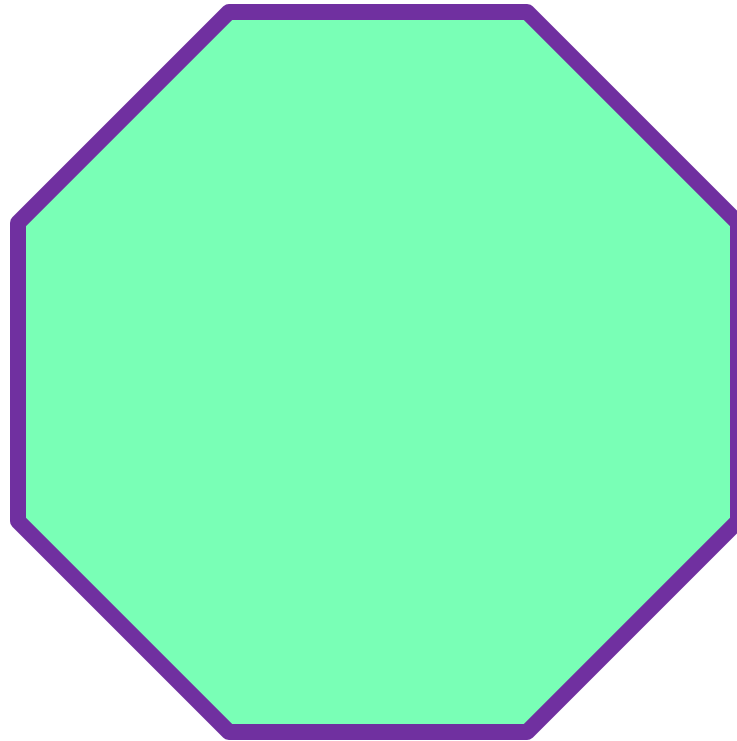
How do we figure out the sum of the angles in any polygon?



Polygon Sum Formula



The _____ of all the _____ in any
_____ is _____.



REVIEW

Equilateral Polygon

A polygon with all _____ .

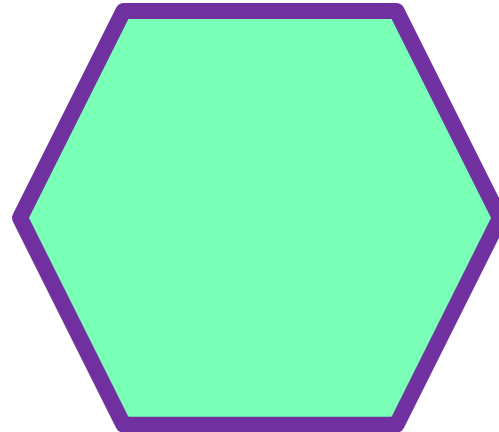
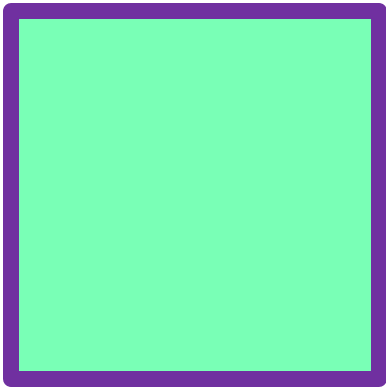
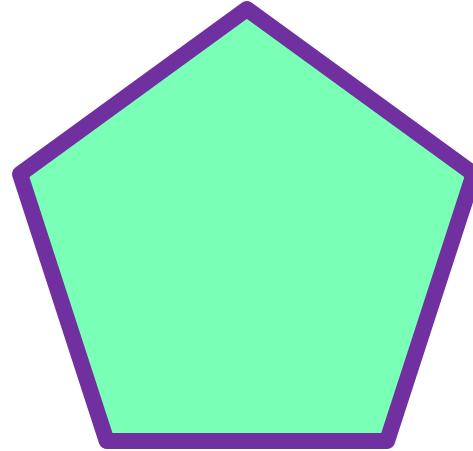
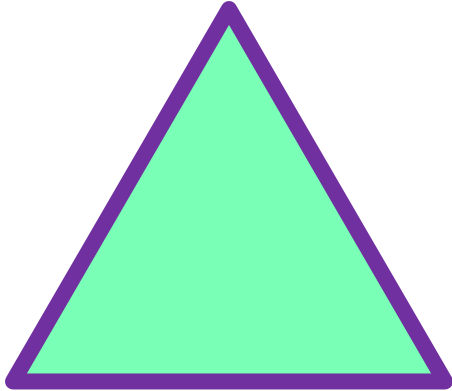
Equiangular Polygon

A polygon with all _____ .

Regular Polygon

A polygon with all _____ and _____
_____ .

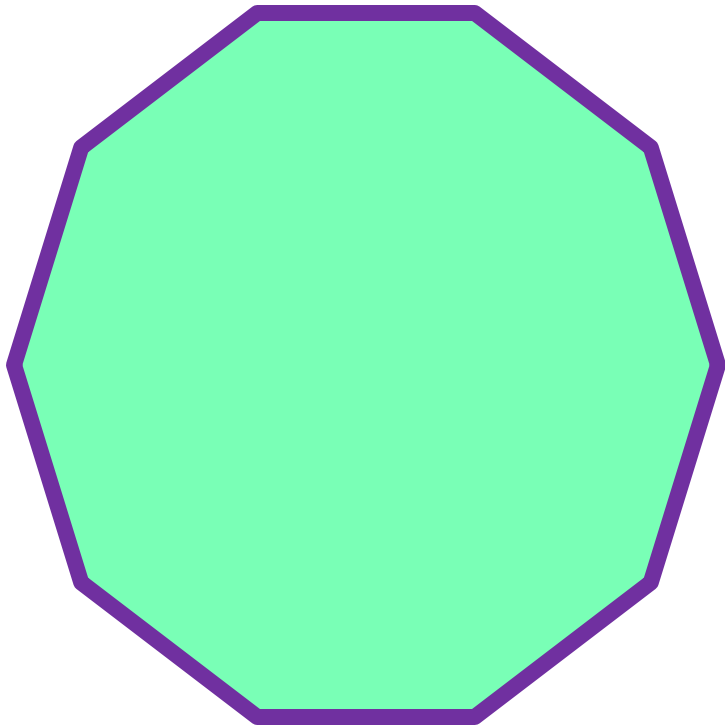
How do we figure out how many degrees one angle is in an equiangular polygon?



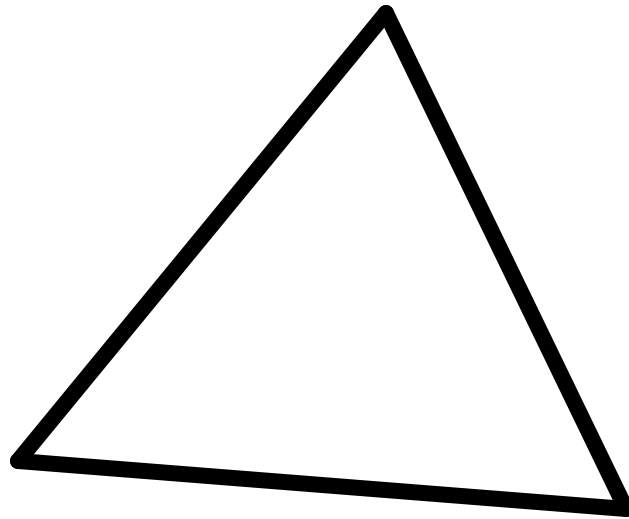
Equiangular Polygon Formula

POK

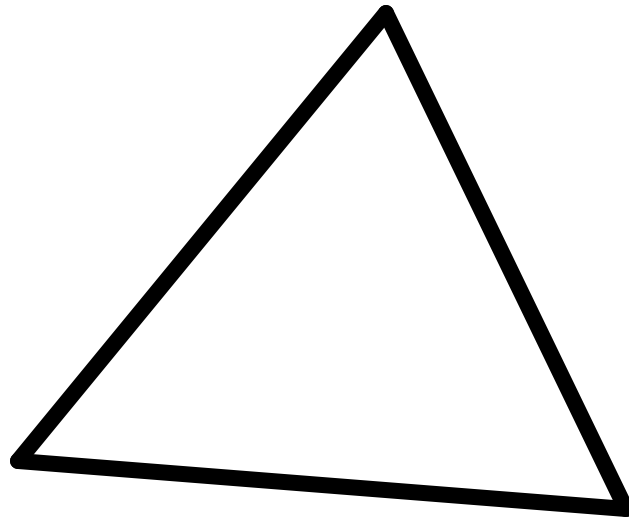
The measure of one angle in any
_____ polygon can be
found using the formula:



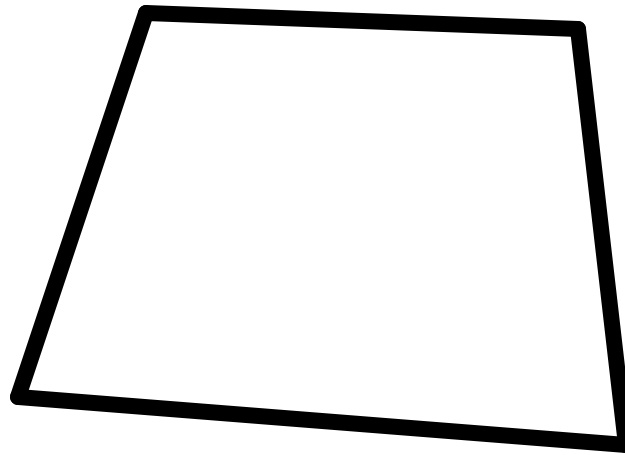
Making exterior angles in a polygon



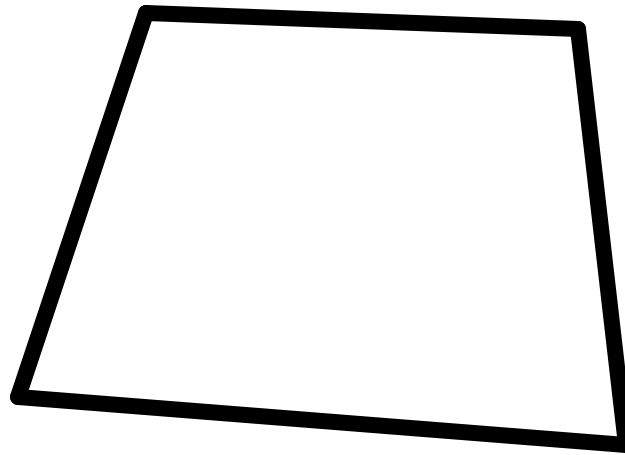
Making exterior angles in a polygon



Making exterior angles in a polygon



Making exterior angles in a polygon



Exploring...

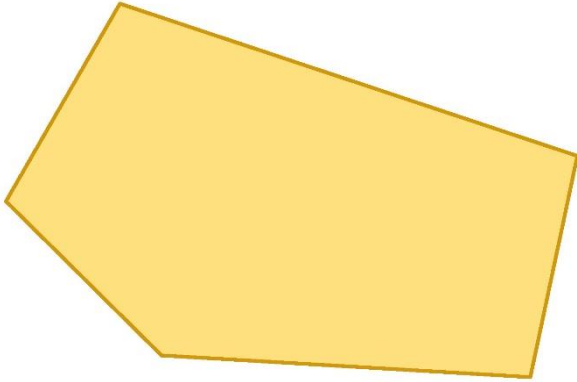
Open on the Sketchpad website the “6.1 – Polygon Exterior Angles” sketch.

Name	# of Sides	Sum of Exterior Angles
Triangle		
Quadrilateral		
Pentagon		
Hexagon		

What would you conjecture is the relationship between all the exterior angles in a polygon?

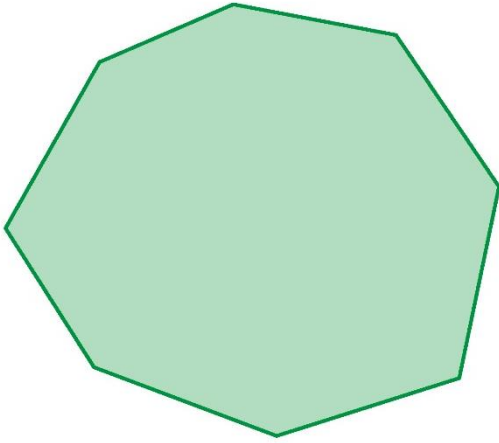
Find the sum of all the interior angles.

1)



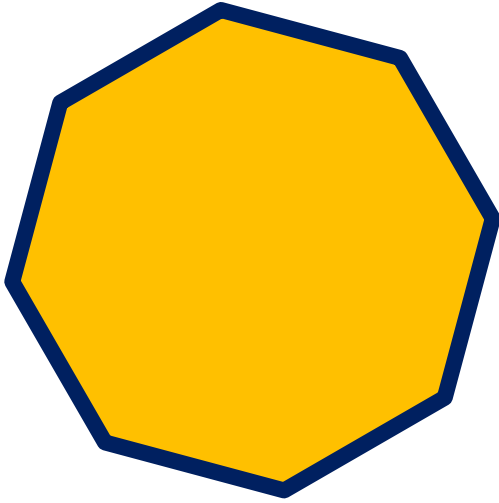
Find the sum of all the interior angles.

2)



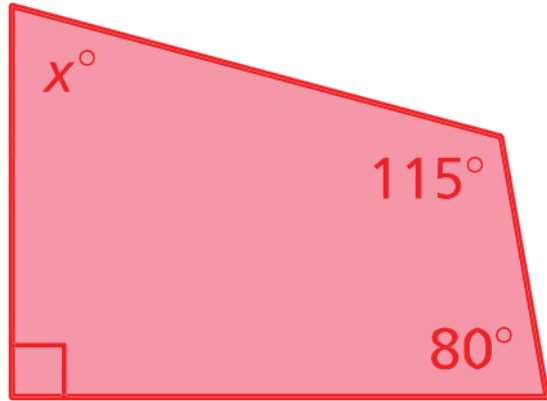
In the following regular polygon, what is the measure of one angle.

3)



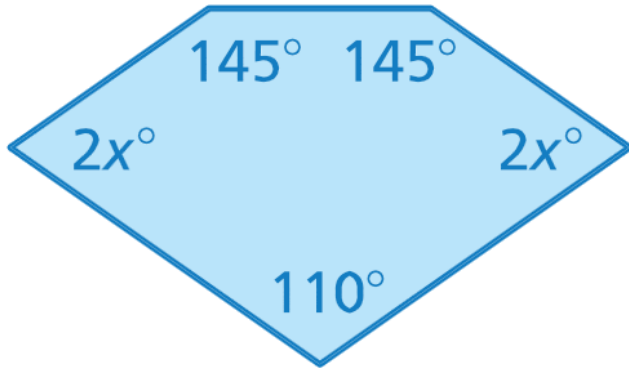
Find all the angles.

4)



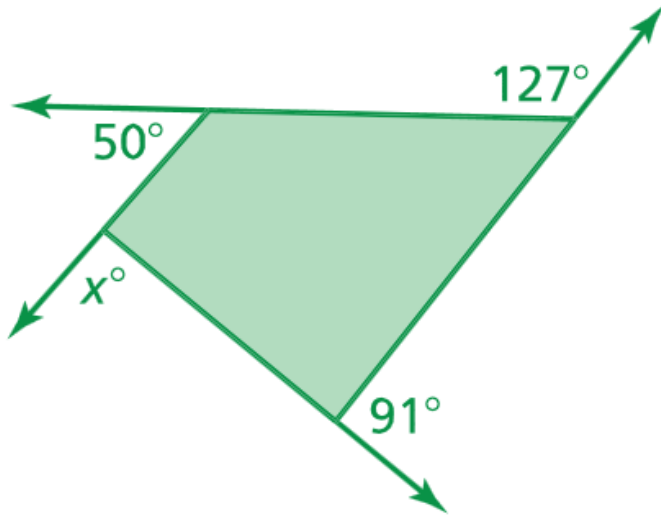
Find all the angles.

5)



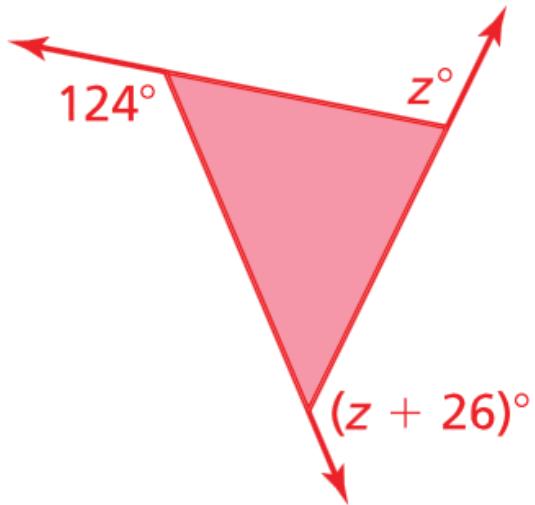
Find all the exterior angles.

6)



Find all the exterior angles.

7)



- 8) A stop sign is in the shape of a regular octagon. What is the measure of each interior angle?**

