12/5/19 - Warm Up Problem

1. Which set of side lengths would form a triangle?

3, 5, 2 6, 8, 1 2, 4, 3 7, 4, 2

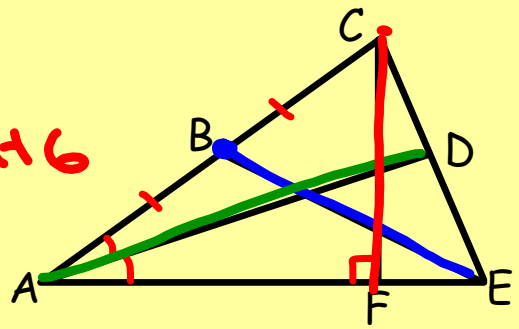
2. What is the range of possible lengths for the 3rd side of a triangle if the other two sides are 6 cm and 9 cm?

$3 < x < 15$

$9-6$ $9+6$

3. Which segment is a median?

$\overline{BE}$

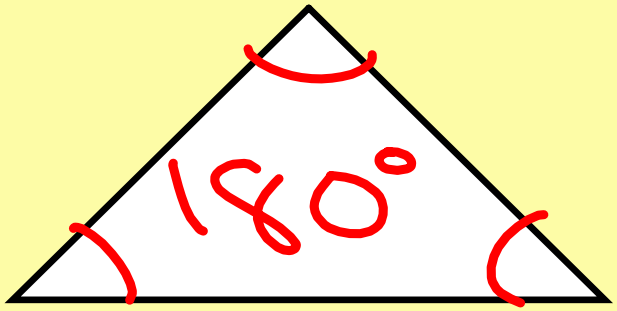


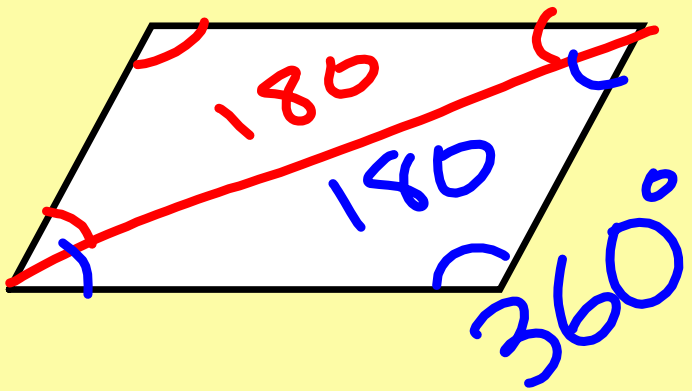
Concept 14 - Polygon Angle-Sum Theorems

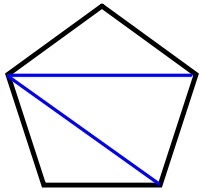
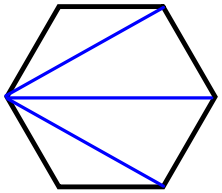
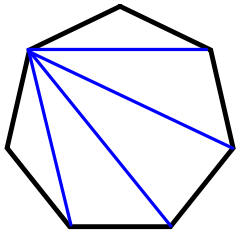
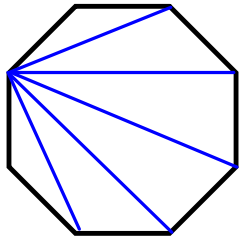
Goal: Calculate the interior angle sum of polygons

Interior Angle Sum: what all the angles inside a polygon add up to

What is the interior angle sum of each polygon?





PENTAGON	HEXAGON	HEPTAGON	OCTAGON
			
# of sides = 5	# of sides = 6	# of sides = 7	# of sides = 8
# of triangles = 3	# of triangles = 4	# of triangles = 5	# of triangles = 6
INTERIOR ANGLE-SUM = 540 degrees	INTERIOR ANGLE-SUM = _____ degrees	INTERIOR ANGLE-SUM = _____ degrees	INTERIOR ANGLE-SUM = _____ degrees

19. How are the number of sides and the number of triangles related for each polygon above?

triangles = 2 less than sides

20. Write an algebraic expression to represent the number of triangles in a polygon with n sides.

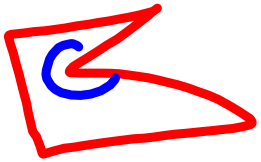
n − 2 = # of triangles

21. Write an algebraic expression to represent how you would find the interior angle-sum of a polygon with n sides.

(n − 2)180

Polygon Angle-Sum Theorem

The sum of the measures of the interior angles of a convex n-gon is $(n - 2)180$.



Corollary to the Polygon Angle-Sum Theorem

The measure of each interior angle of a regular n-gon is

n = # of sides

What is the interior angle sum of a 20-gon?

$(20-2)180 = (18)180 = 3240°$

What is the measure of one interior angle of a regular 20-gon?

$\frac{3240}{20} = 162°$