Created by Lily Unick

Warmup 2/(# of letters in "red + orange + yellow + green + blue")

1) How many helmets would be in pattern #43?

Pattern 1	Pattern 2	Pattern 3

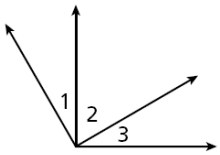
2) If "n" is the pattern number, write a formula that gives the number of helmets in pattern n.

Get a pair of scissors and a ruler!

Write a Paragraph Proof!

Given: ∠2 and ∠3 are complementary
∠1 ≅ ∠3

Prove: ∠2 and ∠1 are comp.



Return of the Quizzes

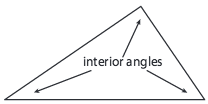
NEXT PAGE

- **"Interior Angles of Polygons"**

OBJECTIVE: EXPLORE INTERIOR AND EXTERIOR ANGLES OF POLYGONS

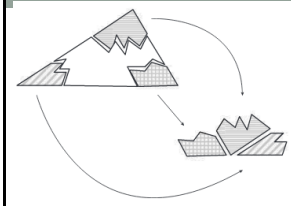
Interior Angles

- An interior angle is an angle formed by two sides of a polygon with a common vertex.
- A triangle has three interior angles



Triangle Explore Activity

- Draw a large-ish triangle on one of your half sheets using a ruler. It can be acute, right, or obtuse.
- Cut your triangle out.
- Color in the very tip of each angle.
- Tear (don't cut) off the three corners of the triangle.
- Rearrange the angles so their sides are adjacent and their vertices meet at a point



- What do you notice?
- The sum of the interior angles of a triangle add to _____

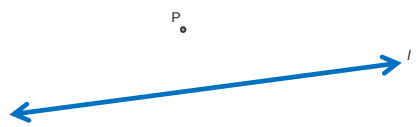
Explore Angles in a Quadrilateral

- Draw a large-ish quadrilateral on one of your half sheets using a ruler.
- Cut your quadrilateral out.
- Tear off the four corners of the quadrilateral.
- Rearrange the angles so their sides are adjacent and their vertices meet at a point

- What do you notice?
- The sum of the interior angles of a quadrilateral add to _____

I need a Volunteer!

Draw as many parallel lines to line l as you can that go through point P

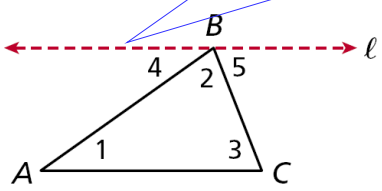


Parallel Postulate

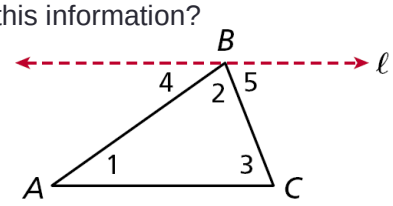
- Through a point P not on line l, there is exactly one line parallel to l.

An **auxiliary line** is a line that is added to a figure to aid in a proof.

An auxiliary line used in the Triangle Sum Theorem. Line l is parallel to line segment AC. We can draw this auxillary line because of the parallel postulate (there is only one line parallel to line segment AC that goes through point B)



1. What is the sum of the measures of angles 4, 2, and 5?
2. How are angles 1 and 4 related?
3. How are angles 5 and 3 related?
4. How might we write a proof using all of this information?



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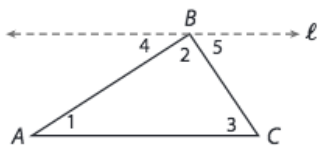

Statements	Reasons
1. Draw line ℓ through point B parallel to $\overline{AC}$.	1. Parallel Postulate
2. $m\angle 1 = m\angle$ 4 and $m\angle 3 = m\angle$ 5	2. Alternate Interior Angles Theorem
3. $m\angle 4 + m\angle 2 + m\angle 5 = 180°$	3. Angle Addition Postulate and definition of straight angle
4. $m\angle$ 1 $+ m\angle 2 + m\angle$ 3 $= 180°$	4. Substitution Property of Equality

Polygon- a closed figure having three or more sides and lying on one plane

Number of Sides	Name of Polygon
3	Triangle
4	Quadrilateral
5	Pentagon
6	Hexagon
7	Heptagon
8	Octagon
9	Nonagon
10	Decagon
12	Dodecagon
n	*n*-gon

11 sides= hendecagon

Fun Facts!

11 hendecagon
12 dodecagon
13 triskaidecagon or tridecagon
14 tetrakaidecagon or tetradecagon
15 pendedecagon
16 hexdecagon
17 heptdecagon
18 octdecagon
19 enneadecagon
20 icosagon
but you can just say 13-gon

Draw the diagonals from any one vertex of the polygon. How many triangles are formed?

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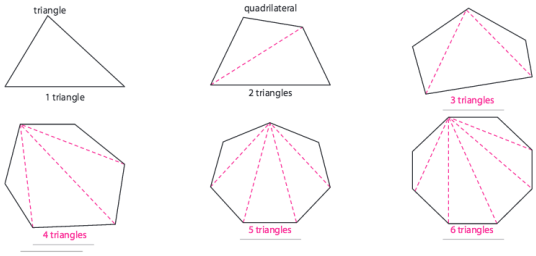


Fill in the Chart!

pg. 1084

Polygon	Number of Sides	Number of Triangles	Sum of Interior Angle Measures
Triangle	3	1	(1)180° = 180°
Quadrilateral	4	2	(2)180° = 360°
Pentagon	5	3	(3) 180° = 540°
Hexagon	6	4	(4) 180° = 720°
Decagon	10	8	(8) 180° = 1440°

Complete C, D on pg. 1085

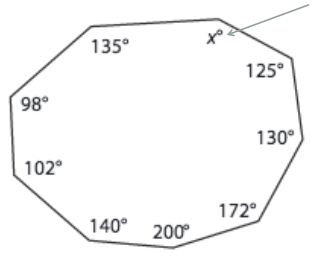
C) Do you notice a pattern between the number of sides and the number of triangles? If n represents the number of sides for any polygon, how can you represent the number of triangles? $n - 2$

D) Make a conjecture for a rule that would give the sum of the interior angles for any n-gon.

Sum of interior angle measures = $(n - 2)180°$

Find x

"It's Right Here!"



X = 158

Homework

- pg. 1090 (1-7)
- and angle chasing