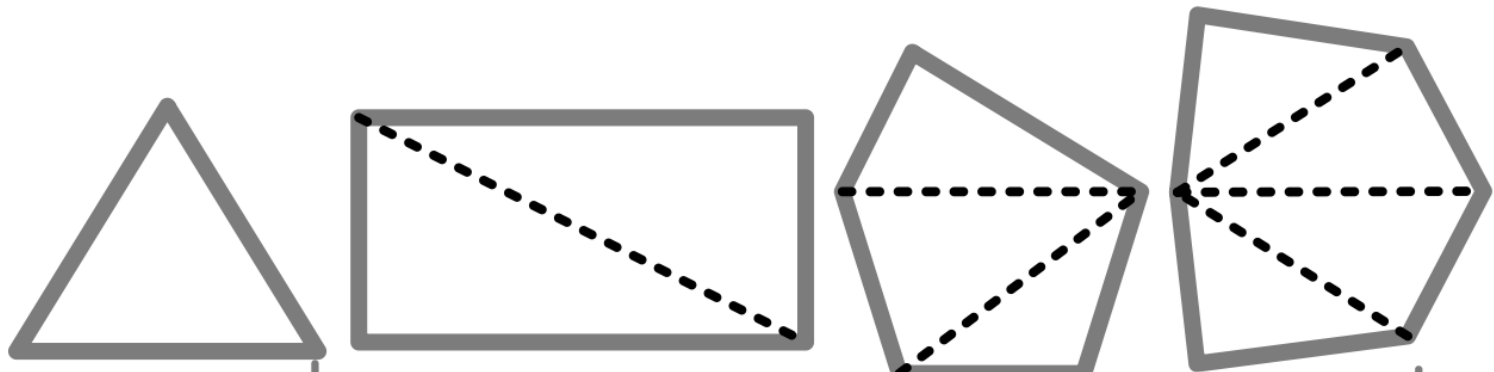


Unit 7 L 2: Angles of Polygons :OBJ Find the sum of interior angle measures of polygons.
 (Section 6-1) Find the sum of exterior angle measures of polygons.

diagonal: a segment that connects 2 nonconsecutive vertices



# of sides	3	4	5	6	n
Δ 's	1	2	3	4	n-2
sum of interior angles	180°	$2(180) = 360^\circ$	$3(180) = 540^\circ$	$4(180) = 720^\circ$	$(n-2)180$
sum of exterior angles*	360°	360°	360°	360°	360°

* one at each vertex

Unit 7 L2: Angles of Polygons :OBJ Find the sum of interior angle measures of polygons.
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Sum of the interior angles of a convex polygon:

$$S = 180(n-2) \quad n = \text{number of sides}$$

IF the polygon is regular: measure of 1 interior angle = $\frac{180(n-2)}{n}$

OR Find one exterior $\frac{360}{n}$ Then take 180 - exterior angle

1. Find the sum of the interior angles of a regular hexagon.
 $n = 6$

$$S = 180(n-2)$$

$$S = 180(6-2)$$

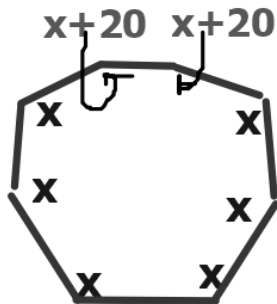
$$S = 180 \cdot 4 = \boxed{720^\circ}$$

Then find the measure of one interior

angle. One int $\angle = \frac{180(n-2)}{n} \rightarrow \frac{180(6-2)}{6} = \frac{720}{6} = 120^\circ$

Unit 7 L 2: Angles of Polygons :OBJ Find the sum of interior angle measures of polygons.
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2. Six angles of a convex octagon are congruent. Each of the other 2 angles has a measure that is 20 more than the measure of the 6 angles. Find the measure of each angle.



x = measure of each of 6 angles
 $x+20$ = measure of each of the other 2 angles

$$S = 180(8-2) = 1080^\circ$$

$$x+x+x+x+x+x+x+20+x+20 = 1080$$

$$8x + 40 = 1080$$

$$8x = 1040$$

$$x = 130$$

**So 6 angles are each 130° And 2 angle are $130+20$
so 150°**

Unit 7 L 2: Angles of Polygons :OBJ Find the sum of interior angle measures of polygons.
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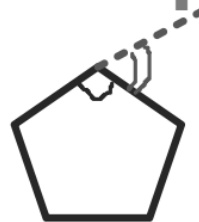
Sum of the exterior angles of a convex polygon is always 360°.

IF the polygon is regular:

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

remember n is the number of sides

What is the relationship between each interior and its exterior??



They form a linear pair so they are supplementary

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

Either
←
↓

Then another way to find one Interior angle of a regular polygon is to take $360 \div n$ and then subtract that answer from 180°

Unit 7 L 2: Angles of Polygons :OBJ Find the sum of interior angle measures of polygons.
(Section 6-1) Find the sum of exterior angle measures of polygons.

- 3. Regular polygon with an interior angle of 135.
Find the number of sides.**

$$180 - 135 = 45 \text{ } \overset{\text{ext } \angle}{\text{}} \\ \frac{360}{45} = 8 \text{ sides}$$

- 4. Regular nonagon.
Find an exterior and an interior angle.**

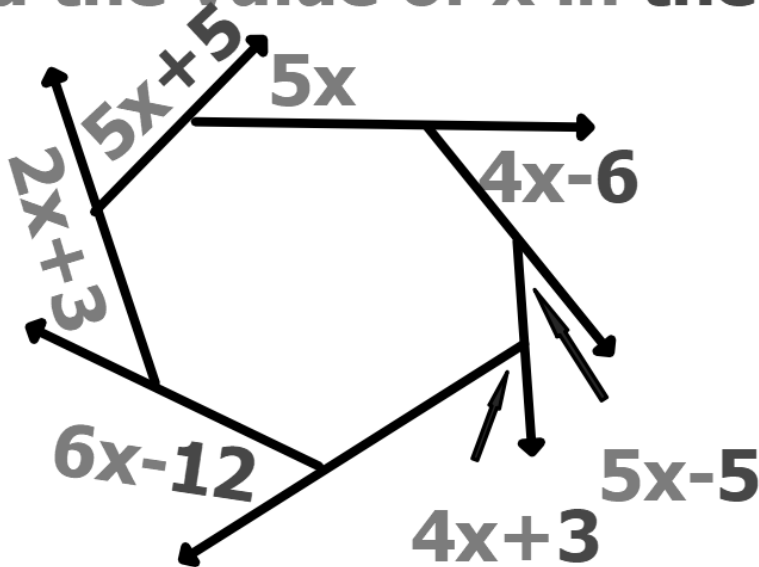
$$\frac{360}{9} = 40 \text{ exterior angle}$$

$$180 - 40 = 140 \text{ interior angle}$$

Unit 7L 2: Angles of Polygons
 (Section 6-1)

Find the sum of interior angle measures of polygons.
Find the sum of exterior angle measures of polygons.

5. Find the value of x in the diagram.



**Add all ext angles to
 =360.**

$$31x - 12 = 360$$

$$31x = 372$$

$$x = 12$$

6. Find the measure of each exterior angle of a regular dodecagon.

$$n = 12$$

$$\frac{360}{12} = 30$$

Each exterior angle is 30°

Unit 7 L 2:Angles of Polygons OBJ - Identify and name polygons
Find perimeter/circumference of 2 dim. figures

Assignment: p. 397: 1-37 odd, 65, 66

