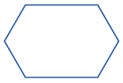
8.2 Angles in Polygons

Goal: To be able to find the measures of interior and exterior angles of polygons

Warm up

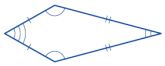
Decide whether the polygon is *convex* or *concave*.

1. 

2. 

Decide whether the polygon is *equilateral, equiangular,* or *neither*.

3. 

4. 

5. Decide whether the polygon is regular. Explain your answer.

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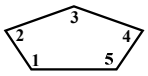
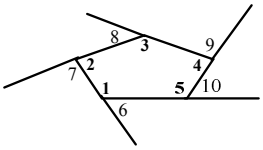
Interior angles of a polygon: the angles that are inside a polygon formed by the sides of the polygon

∠1
∠2
∠3
∠4
∠5
} **interior angles**



Exterior angles of a polygon: an exterior angle of a polygon is an angle formed by a side and an extension of adjacent side

∠6
∠7
∠8
∠9
∠10
} **exterior angles**



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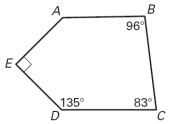
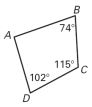
Polygon Interior Angles Theorem

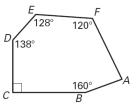
The sum of the measures of the interior angles of a convex polygon with n sides is $(n - 2) \cdot 180°$.

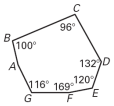
Use Polygon Interior Angles Theorem



Find the measure of ∠*A*.

4. 

5. 

6. 

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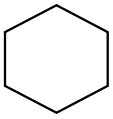
To find the measure of one interior angle of a regular polygon: $\frac{(n-2)\ 180}{n}$



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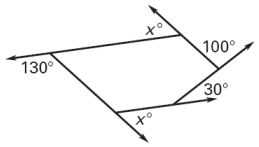
Polygon Exterior Angles Theorem

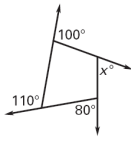
The sum of the measures of the exterior angles of a convex polygon, one angle at each vertex, is 360°.

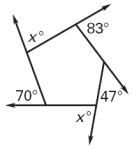
Find the Measure of an Exterior Angle

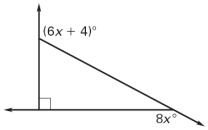
Find the value of x.



Find the value of *x*.

7. 

8. 

9. 

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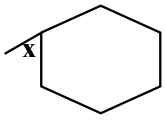
To find the measure of one exterior angle of a regular polygon: $\frac{360}{n}$



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