

Math 8

Our Goal: To find the interior and exterior angle measures of a polygon

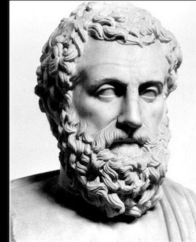
Warm Up: Quiz discussion

Today's Homework

3.3 Exercises, p.123-124: 1-24

Previous Homework

None

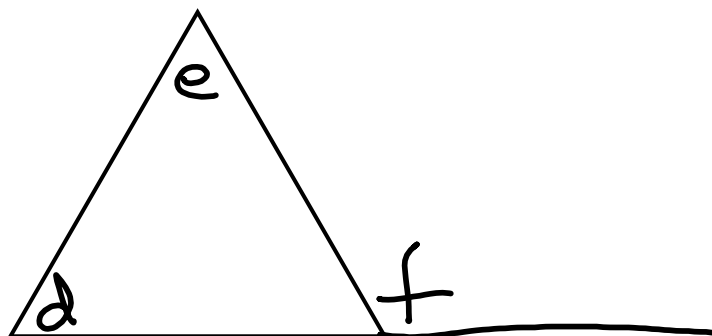
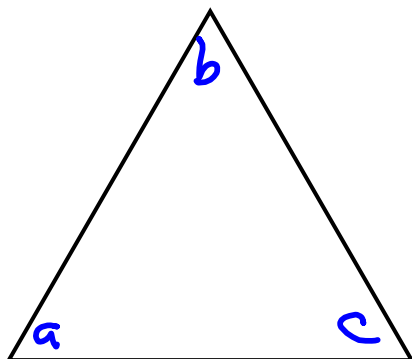


**“Wise men speak when
they have something to say,
fools speak because they
have to say something.”**

— Aristotle

Essential Question

How can you find the sum of the interior angle measures and the sum of the exterior angle measures of a polygon?



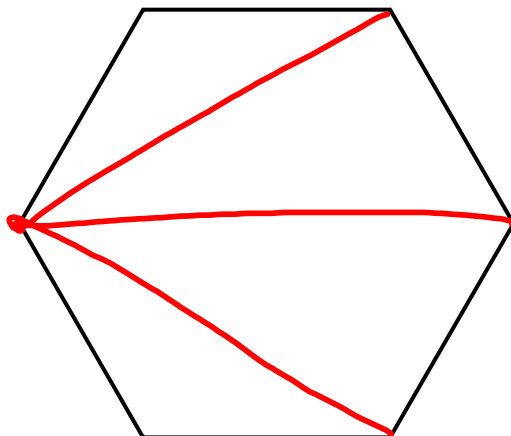
diagonals

1 pentagon
3 triangles

$$\begin{array}{r} 180 \\ \times 3 \\ \hline 540^\circ \end{array}$$

1 quadrilateral
2 triangles

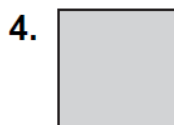
$$\begin{array}{r} 180 \\ \times 2 \\ \hline 360^\circ \end{array}$$



6 sides
4 triangles

$$\begin{array}{r} 180 \\ \times 4 \\ \hline 720^\circ \end{array}$$

Use triangles to find the sum of the interior angle measures of the polygon.



 **Key Idea**

Interior Angle Measures of a Polygon

The sum S of the interior angle measures of a polygon with n sides is

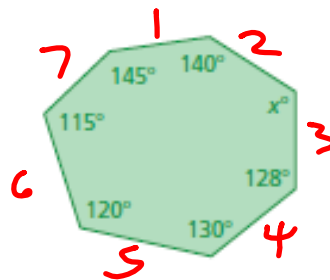
$$S = (n - 2) \cdot 180^\circ.$$

Find the sum of the interior angle measures of the school crossing sign.



$$\begin{aligned} & (5-2) \cdot 180 \\ & 3 \cdot 180 \\ & 540^\circ \end{aligned}$$

Find the value of x.



Sides: 7

$$\text{Sum of } \angle\text{'s: } (7-2) \cdot 180^\circ$$

$$\begin{aligned} x + 128 + 130 + 120 + 115 &= 900 \\ + 145 + 140 & \end{aligned}$$

A regular polygon has congruent sides and congruent angles.

Find the measure of each interior angle of the regular polygon.

6. octagon

7. decagon

8. 18-gon

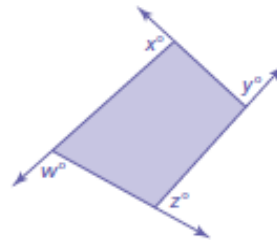
$$\frac{(8-2) \cdot 180}{8}$$

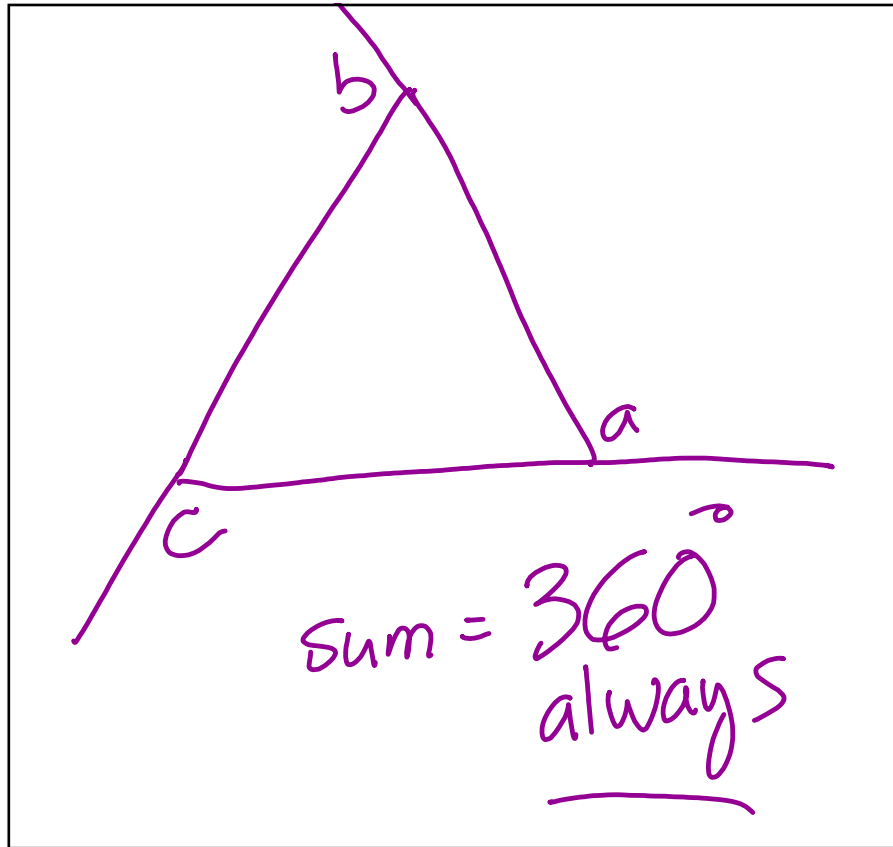
Key Idea

Exterior Angle Measures of a Polygon

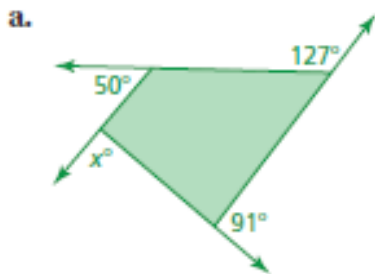
Words The sum of the measures of the exterior angles of a convex polygon is 360° .

Algebra $w + x + y + z = 360$

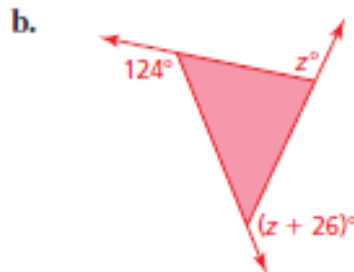




Find the measures of the exterior angles of each polygon.

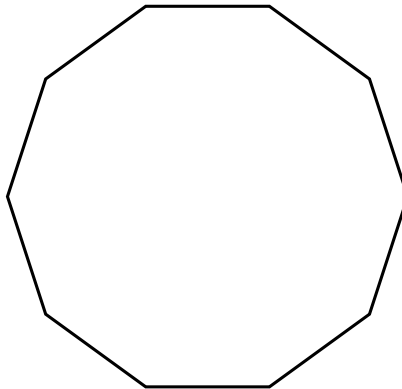
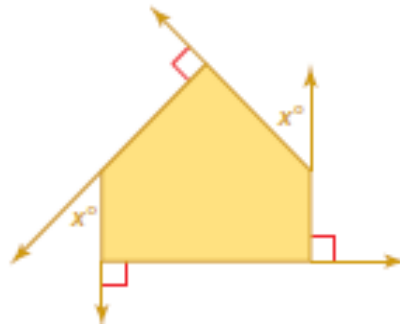


$$x + 50 + 127 + 91 = 360$$



$$z + (z + 26) + 124 = 360$$

9. Find the measures of the exterior angles of the polygon.



10 sides: Sum of interior \angle 's
 $(10-2) \cdot 180$
Sum of exterior \angle 's
360

February 1, 2024

