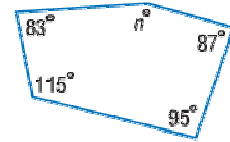


Lesson 4-7

Example 1

SURVEYING A playground has the shape shown in the figure to the right. A surveyor measures four of the angles of the playground. Find the unknown angle.



Solution

The polygon has 5 sides. Use the polygon-sum theorem to find the sum of the angle measures.

$$(n - 2)180^\circ = (5 - 2)180^\circ = (3)180^\circ = 540^\circ$$

Add the known angles measures.

$$83^\circ + 115^\circ + 95^\circ + 87^\circ = 380^\circ$$

Subtract this sum from 540° : $540^\circ - 380^\circ = 160^\circ$

The unknown angle measure is 160° .

Example 2

- Find the measure of each interior angles of a regular 12-gon.
- Find the measure of each exterior angles of a regular 12-gon.

Solution

- Using the polygon-sum theorem, the sum of the measures of the interior angles is $(n - 2)180^\circ = (12 - 2)180^\circ = (10)180^\circ = 1800^\circ$.

Because the 12-gon is regular, each interior angle is equal in measure. So, the measure of one interior angle is $1800^\circ \div 12 = 150^\circ$.

- By the polygon exterior angle theorem, the sum of the measures of the exterior angles is 360° . So, the measure of one exterior angle is $360^\circ \div 12 = 30^\circ$.