

Algebra 2
Unit: Geometry
Section: Geometry of Quadrilaterals

Example: The Algebra of Rhombi

Problem:

Shown below is rhombus A B C D. Find the value of x given the following information. The measure of angle A D C equals 78 degrees, and the measure of angle A B O equals $5x + 103$.

Solution:

One property of parallelograms, and thus rhombi, is that opposite angles are congruent.

We can say then, that the measure of angle A B C equals the measure of angle A D C.

This means that the measure of angle ABC equals 78 degrees.

One property of rhombi specifically is that the diagonals bisect the angles. This means that the measure of angle ABO is half of the measure of angle ABC.

The measure of angle ABO equals 39 degrees.

From the information given in the problem, we can write the equation $5x + 103 = 39$.

Solving this equation, we find that x equals negative 12 point 8.

As usual, it is always a good idea to substitute this x value into the original equation. This is a good way to see if the answer you got is accurate and fits the properties of the figure.