Script

Example: Parallelograms: Properties of Their Angles

Problem:

Find the value of x and y in parallelogram ABCD. Angle A measures 65 degrees, angle B measures 115 degrees, angle C measures 3x plus y, and angle D measures 5x plus 2y.

Solution:

Opposite angles of a parallelogram are congruent. Angle A is congruent to angle C. Angle B is congruent to angle D.

Write two equations to represent the congruent angles. If angle A is congruent to angle C then 3x plus y equals 65. If angle B is congruent to angle D, then 5x plus 2y equals 115. To solve this system of equations, use the substitution method. Get y alone in the first equation, 3x plus y equals 65.

Y equals 65 minus 3x. Substitute the value of y into the second equation 5x plus 2y equals 115.

5x plus 2 times the quantity 65 minus 3x equals 115. Distribute the 2 to the 65 and negative 3x.

5x plus 130 minus 6x equals 115. Combine 5x and negative 6x.

Negative x plus 130 equals 115. Subtract 130 from both sides of the equation.

Negative x equals negative 15. Divide both sides by negative 1.

x equals 15.

To find the value of y, substitute the value of x equals 15 into one of the original equations. Let's substitute it into the first equation where we isolated the variable y. y equals 65 minus 3x.

y equals 65 minus 3 times 15, this equals 20. The value of y is 20.

The solution is x equals 15 and y equals 20.