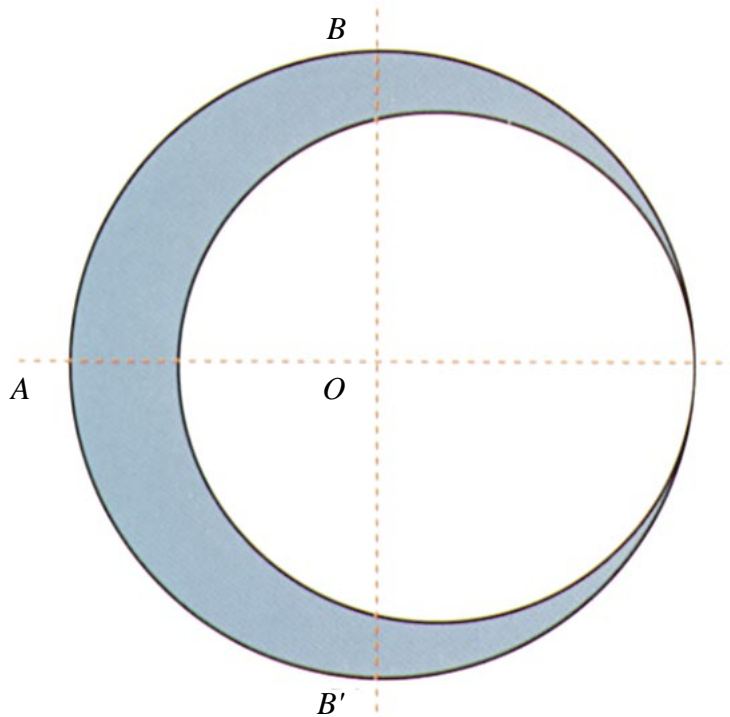


The Curious Crescent

Problem-of-the-Week

The Problem

The shaded crescent is formed by two circles with the center of the larger circle at point O . The width of the crescent at points B and B' is 5 units. At point A , the width is 9 units. Find the diameters of the two circles.



Strategies and Hints

1. If the base of a triangle is the diameter of a circle, what must be true of the angle opposite the diameter?
2. One way to solve the problem is to use a right triangle in the top half of the smaller circle. If x is the radius of the larger circle, the altitude of this right triangle is $x - 5$.
3. What segment in the figure has a length of $x - 9$?
4. Use similar triangles to find a relationship among x , $x - 5$, and $x - 9$.