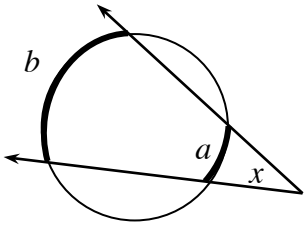
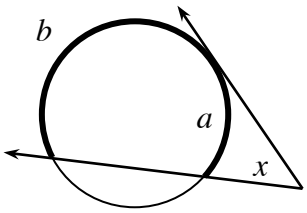
# Secant-Arc Relationships

A secant line, also simply called a secant, is a line that passes through exactly two points of a circle. In this course, you will only consider secant lines that intersect outside or on a circle. Intersections inside a circle will be left for another course.

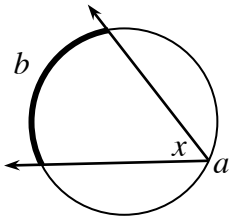
General case of two secant lines intersecting outside a circle. If one of the is a tangent line instead of a secant line, the relationship remains the same. For more information, see problems 11-106 and 11-107.



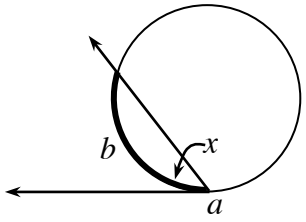

$$x = \frac{b-a}{2}$$



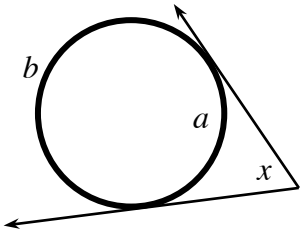

If the intersection of two secant lines is on the circle, then $a = 0$. You will recognize the relationship below as the Inscribed Angle Theorem (the measure of an inscribed angle is half of the measure of its intercepted arc). For more information, see the Math Notes box in Lesson 10.1.3. If one of the lines is a tangent line instead of a secant line, the relationship remains the same. For more information, see problem 11-105.




$$x = \frac{b}{2}$$




If both lines are tangent lines, then $b = 360° - a$ and $x = \frac{b-a}{2}$ can be rewritten as follows. For more information, see problem 11-95 and the Math Notes box in Lesson 11.2.3.




$$x = 180° - a$$