

Unit Guide

When Lines and Angles Intersect a Circle

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In this unit, students will come to discover and prove that lines and angles that intersect a circle result in special properties. Students will tap into their prior knowledge of trigonometric ratios, the Pythagorean Theorem, as well as the External Angle Theorem. Through exploration and hands-on construction, students will come to appreciate how the properties of circles are very much related to the properties of triangles. Specifically, students will about the following properties: lines tangent to a circle, chords and their relationship to their intercept arc measures, inscribed angles and how they relate to their intercepted arcs, angles formed by chords in the interior of the circle, and angles formed by secants and/or tangents in the exterior of the circle. Students will form conjectures about the many properties they will explore based on their observations of patterns, but they will be asked to prove their conjectures work for all cases by developing their ability to use geometric reasoning. This unit is intended for students at the sophomore/junior level of high school.