10.1 Circles: Use Properties of Tangents

Circle Definition: Set of all points in a plane equidistant from a given point called the cemter.

A circle is named by its center

Parts of a circle: radius, diameter, chord, secant, tangent

All radii are congruent

Diameter = 2 times radius (D = 2r)

Coplanar Circles (circles in the same pane): two circles can intersect in two points, one point, or no points.

Two points of intersection:

Coplanar circles that intersect in one point are called Tangent Circles.

Coplanar circles that have a common center are called Concentric Circles.

Other no points of intersection.

Common Tangents: A line, ray, or segment that is tangent to two coplanar circles.

Example:

Theorem 10.1

In a plane, a line is tangent to a circle if and only if the line is perpendicular to a radius of the circle at its endpoint on the circle.

Example: In the diagram, B is a point of tangency. Find the radius r of circle C.

Theorem 10.2

Tangent segments from a common external point are congruent.

Example:

Example:

Construct a tangent line to a circle.