

Explorations

These exploratory exercises can be done using a computer with a program that draws and measures geometric figures.

1. Inscribe a circle D inside a $\triangle ABC$. Draw \overline{DA} , \overline{DB} , and \overline{DC} . Compare the measures of $\angle ABD$ and $\angle ABC$, $\angle ACD$ and $\angle ACB$, $\angle BAD$ and $\angle BAC$. What do you notice? What type of lines intersect at the center of a circle inscribed in a triangle?
2. Circumscribe a circle D about a $\triangle ABC$. Draw perpendicular segments from D to \overline{AB} , \overline{BC} , and \overline{CA} , intersecting the sides at E , F , and G , respectively. Compare the lengths of \overline{AE} and \overline{AB} , \overline{BF} and \overline{BC} , and \overline{CG} and \overline{CA} . What do you notice? What type of lines intersect at the center of a circle circumscribed about a triangle?

More Constructions

Objectives

1. Perform seven additional basic constructions.
2. Use the basic constructions in original construction exercises.

10-4 Circles

Construction 8

Given a point on a circle, construct the tangent to the circle at the given point.

Given: Point A on $\odot O$

Construct: The tangent to $\odot O$ at A

Procedure:

1. Draw \overrightarrow{OA} .
2. Construct the line perpendicular to \overrightarrow{OA} at A . Call it t .

Line t is tangent to $\odot O$ at A .

Justification: Because t is perpendicular to radius \overline{OA} at A ,
 t is tangent to $\odot O$.

