

Drawing a Line Tangent to a Circle

Approximate
Total Time:
20 minutes

ACTIVITY OVERVIEW:

In this activity we will

- Draw a circle
- Draw a radius of the circle
- Construct a line perpendicular to the radius at its endpoint. This will be a tangent line.



“In a plane, if a line is perpendicular to a radius of a circle at its endpoint on the circle, then the line is a tangent.”

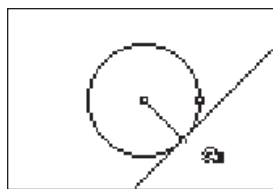
We can use this theorem and our skills with the drawing tools of Cabri Jr. to draw a line tangent to a circle.

NCTM Geometry Standard: Analyze characteristics and properties of 2- and 3-dimensional geometric shapes and develop mathematical arguments about geometric relationships.



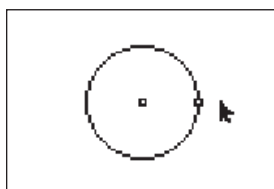
1

Press **[APPS]**. Move down to the Cabri Jr APP and press **[ENTER]**. Press **[ENTER]**, or any key, to begin using the application. Press **[Y=]** for the F1 menu and select **New**. (If asked to **Save changes?** press **[↓]** **[ENTER]** to choose “No.”)



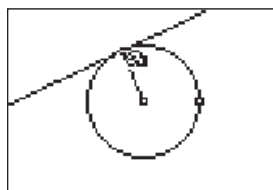
5

Move the pointer until the endpoint of the radius on the circle is flashing and press **[ALPHA]** to turn on the *hand*. Move this endpoint of the radius to a different location on the circle and observe movement of the line. Press **[CLEAR]** to turn off the *hand*.



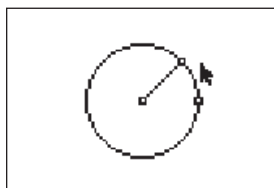
2

Press **[WINDOW]** for F2, move down to **Circle** and press **[ENTER]**. Move to the desired location of the center and press **[ENTER]**. Move to indicate the length of the radius and press **[ENTER]**. Press **[CLEAR]** to turn off the **Circle** tool.



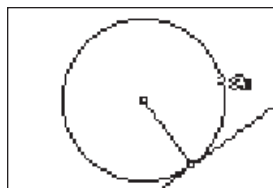
6

We have drawn a line tangent to the circle using the theorem: “In a plane, if a line is perpendicular to a radius of a circle at its endpoint on the circle, then the line is a tangent.”



3

Press **[WINDOW]** for F2, move down to **Segment**, and press **[ENTER]**. Move the pencil until the center of the circle is flashing and press **[ENTER]**. Move the pencil until the circle is flashing and press **[ENTER]**. Press **[CLEAR]** to turn off the **Segment** tool.



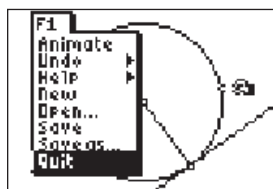
7

You can change the size of the circle and observe that the line remains tangent at the endpoint of the radius. To do this, move the pointer until the other point on the circle is flashing and press **[ALPHA]**. Move this point to change the size of the circle.



4

Press **[ZOOM]** for F3, move to **Perp.** and press **[ENTER]**. Move the pencil until the endpoint of the radius on the circle is flashing and press **[ENTER]**. Move until the radius is also flashing and press **[ENTER]**. This draws a line through the endpoint on the circle and perpendicular to the radius. Press **[CLEAR]** to turn off the **Perp.** tool.



8

To exit the APP, press **[Y=]** for the F1 menu. Move to **Quit**, then press **[ENTER]**. (Or you can press **[2nd]** **[MODE]** for **[QUIT]**.)