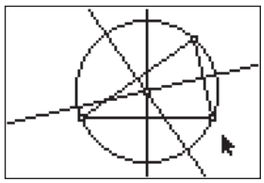
Circumscribing a Circle About a Triangle

Approximate Total Time: 20 minutes

ACTIVITY OVERVIEW:

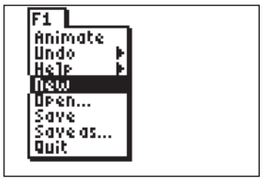
In this activity we will

- Draw a triangle
- Draw the perpendicular bisector of each side
- Locate the *circumcenter*
- Find the distance from the *circumcenter* to a vertex of the triangle
- Draw the *circumcircle* of the triangle.



How far is it from the *circumcenter* of a triangle to each vertex of the triangle? This distance determines the radius of a special circle that we will draw using the *circumcenter* as the center of the circle.

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



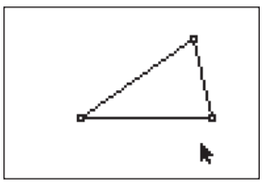
1

Press APPS. Move down to the CabriJr 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.")

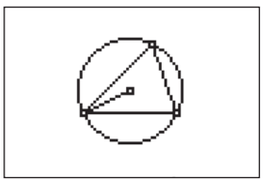
For TI-Navigator™ Users

Send an APP VAR: You may have saved the figure from Activity 9 as an APP VAR. If so, send it via TI-Navigator, and then have students *Open* the file to begin the activity with the triangle and its *circumcenter* already located. For help, see page 74.



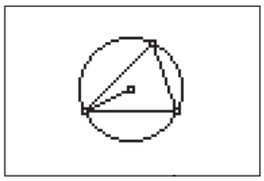
2

Press WINDOW for F2, move down to **Triangle** and press ENTER. Move to the location of a vertex and press ENTER. Move to the second vertex and press ENTER. Move to the third vertex and press ENTER. Press CLEAR to exit the triangle drawing tool.



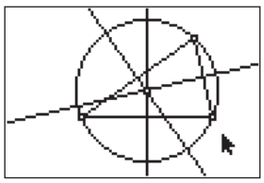
3

Press ZOOM for the F3 menu and move down to **Perp. Bis.** and press ENTER. Move the arrow until one side of the triangle is selected (flashing) and press ENTER. The **Perp. Bis.** tool is still active, so move to another side of the triangle and press ENTER when the side is flashing. Repeat for the third side of the triangle. Press CLEAR to exit the **Perp. Bis.** drawing tool.



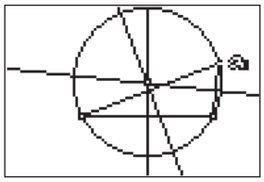
4

The perpendicular bisectors of the sides of any triangle intersect at a common point. This point is called the *circumcenter* of the triangle and is equidistant to the vertices. This point is also the center of the *circumcircle* of the triangle. This is the circle with its center at the *circumcenter* and a radius equal to the distance from the *circumcenter* to a vertex.



5

Press WINDOW for F2, move down to **Circle** and press ENTER. Move the pencil until two of the perpendicular bisectors are flashing and press ENTER. This will mark the *circumcenter* of the triangle as the center of the circle you are drawing. Move the pencil until a vertex point is flashing and press ENTER. Press CLEAR to turn off the **Circle** tool.



6

Move to a vertex, press ALPHA, and observe the changes in the *circumcenter* and the circle as you move the vertex.

7

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