

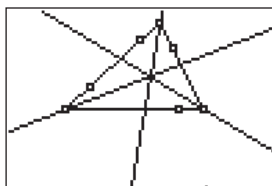
# Incenter of a Triangle

Approximate  
Total Time:  
30 minutes

## ACTIVITY OVERVIEW:

### In this activity we will

- Draw a triangle
- Draw the bisector of each angle of the triangle
- Locate the *incenter*
- Explore properties of the *incenter*



In this activity we will observe a special characteristic of the bisectors of the angles in a triangle. We will be able to test our conjecture by changing the size and shape of the triangle.

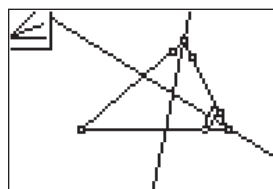
**NCTM Geometry Standard:** Analyze characteristics and properties of 2- and 3-dimensional geometric shapes and develop mathematical arguments about geometric relationships.



1

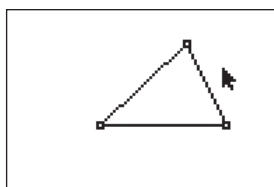
Press [APPS]. Move down to the Cabri Jr APP and press [ENTER]. Press [ENTER], or any key, to begin using the application.

Press [Y] for the F1 menu and select **New**. (If asked to **Save changes?** press [↓] [ENTER] to choose “No.”)



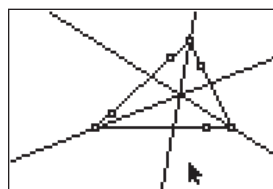
4

With the **Angle Bis.** tool still active, press [ENTER] to select that point again OR move to another point on the side of the triangle and press [ENTER]. Move to the next vertex point and press [ENTER], then move to a point on the other side forming the angle and press [ENTER].



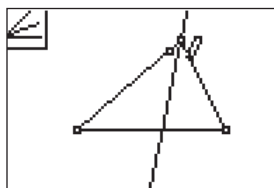
2

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.



5

With the **Angle Bis.** tool still active, press [ENTER] to select that point again OR move to another point on the side of the triangle and press [ENTER]. Move to the remaining vertex point and press [ENTER], then move to a point on the other side forming the angle and press [ENTER]. Press [CLEAR] to exit the **Angle Bis.** tool.



3

Press [ZOOM] for the F3 menu, move to **Angle Bis.**, and press [ENTER]. Move the pencil until one side of the triangle is flashing then press [ENTER]. This marks a point on the side of the triangle. Move until the vertex point flashes and press [ENTER]. Move until the other side forming the angle is flashing and press [ENTER] again. You have used 3 points to identify an angle and the angle bisector has been drawn.



6

What appears to be true about the intersection of the bisectors of the angles of the triangle?

(They appear to intersect at a common point.)

Move to a vertex of the triangle, press [ALPHA] to activate the *hand* and move the vertex to a new location.

# Incenter of a Triangle



7

Press **CLEAR** to deactivate the *hand* and move to a different vertex of the triangle. Press **ALPHA** and move the point at this vertex.

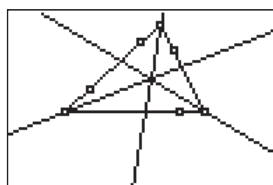
What appears to be true about the intersection of the bisectors of the angles of the triangle?



8

Press **CLEAR** to deactivate the *hand* and move to a different vertex of the triangle. Press **ALPHA** and move the third point defining the triangle.

What appears to be true about the intersection of the bisectors of the angles of the triangle?



9

The bisectors of the angles of the triangle intersect at a common point. This point is called the *incenter* of the triangle.



## For TI-Navigator™ Users

You may wish to save this file and send it to students as an APP VAR for exploration and investigation in Activity 12. For help, see page 74.



10

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