

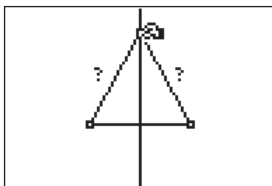
# Points on the Perpendicular Bisector of a Segment

Approximate  
Total Time:  
20 minutes

## ACTIVITY OVERVIEW:

In this activity we will

- Draw a line segment
- Draw the perpendicular bisector
- Investigate the distance between a point on the perpendicular bisector and endpoints of the segment.



By using the drawing and measurement tools of Cabri Jr., we can illustrate the concept of “equidistant from the endpoints of a segment.” We can move a point on the perpendicular bisector and observe the changes that occur.

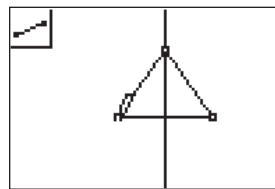
**NCTM Geometry Standard:** Analyze characteristics and properties of 2- and 3-dimensional geometric shapes and develop mathematical arguments about geometric relationships.



1

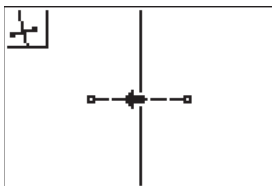
Press **[APPS]**. Move down to the Cabri Jr APP and press **[ENTER]**. Press **[ENTER]**, or any key, to begin using the application.

Press **[Y=]** for the F1 menu and select **New**. (If asked to **Save changes?** press **[4]** **[ENTER]** to choose “No.”)



4

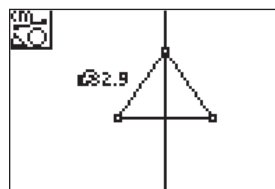
Press **[WINDOW]**, move to **Segment**, and press **[ENTER]**. Move the pencil until the point drawn on the bisector is flashing and press **[ENTER]**. Move to one of the segment endpoints, and once it is flashing, press **[ENTER]**. Now create another segment between the point on the perpendicular bisector and the other endpoint. (The distance from the endpoints to the point on the perpendicular bisector can be measured without the segments, but they provide a better illustration of the distance measured.)



2

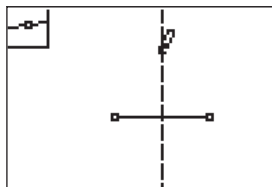
Press **[WINDOW]** for the F2 menu, move to **Segment**, and press **[ENTER]**. Move the pencil to the desired location of the first endpoint of the segment and press **[ENTER]**. Move right to the desired location of the second endpoint and press **[ENTER]**.

Press **[ZOOM]**, move to **Perp. Bis.**, and press **[ENTER]** to access the tool. Move the pencil until it becomes an arrow and the segment is flashing. Press **[ENTER]** and the perpendicular bisector is drawn.



5

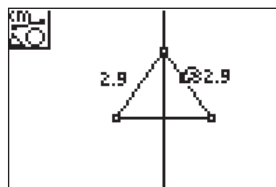
Press **[GRAPH]** for F5. Move down to **Measure**, move right to select **D. & Length**, and press **[ENTER]**. Move the pencil near one of the segments and when it is dashed and flashing, press **[ENTER]**. The *hand* is active and the measurement can be moved to a convenient location. Press **[ENTER]** to place the measurement and deactivate the *hand*.



3

Press **[WINDOW]** for the F2 menu, move to **Point**, move right and down to **Point on** and press **[ENTER]**. Move the pencil until the perpendicular bisector is flashing, and press **[ENTER]**.

# Points on the Perpendicular Bisector of a Segment



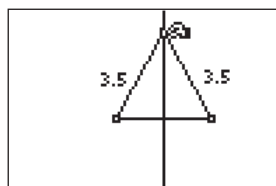
6

The measurement tool is still active and you can now measure the distance from the point on the perpendicular bisector to the other endpoint of the segment. Move the pencil to the other segment and press **[ENTER]** when it is flashing. The new measurement appears and can be placed where desired by pressing **[ENTER]**. Press **[CLEAR]** to deactivate the measurement tool.



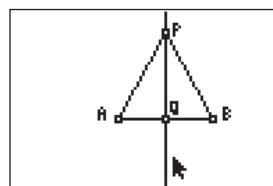
9

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



7

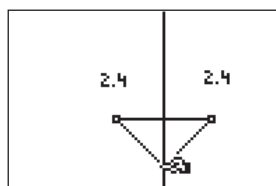
Move the arrow near the point on the perpendicular bisector. When the point is flashing, press **[ALPHA]** to activate the *hand*. Move the point up to a new location on the perpendicular bisector and observe the changes in the measurements of the distances to the endpoints.



10

$\overline{AB} \cong \overline{BQ}$  and  $\overline{PQ} \perp \overline{AB}$

Conjecture: Any point on the perpendicular bisector of a line segment is \_\_\_\_\_ from the endpoints of the segment.



8

Move the point down to a new location on the perpendicular bisector and observe the changes in the measurements of the distances to the endpoints.